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Saskatchewan
Highways and
Transportation

Annual Report 1981-82

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Saskatchewan Highways And Transportation

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Letter of Transmittal

The Honourable C. Irwin McIntosh
Lieutenant Governor
Province of Saskatchewan

Sir:

It is my duty and privilege to present you with the annual report for the fiscal year 1981-82 for Saskatchewan Highways and Transportation.

Respectfully submitted,

Jim Garner.

James W. Garner
Minister
Saskatchewan Highways
and Transportation

Main Objectives

Major Activities for 1982-83

- Upgrade deficient sections of the provincial highway system.

- Provide assistance to urban areas to improve major arterials and expressways.

- Continue the Operation Open Roads Program to assist smaller communities with reliable access to provincial highways.

- Continue four-laning the Trans-Canada Highway west of Swift Current.

- Continue northern highway upgrading and construction.

June 1, 1982

Honourable James W. Garner
Minister
Saskatchewan Highways and Transportation

Sir:

It is my pleasure to present to you the annual report of Saskatchewan Highways and Transportation for the fiscal year ending March 31, 1982. This report provides a wide range of detail on all aspects of department activities.

It has been a busy year for all staff. The challenge of providing quality and safe transportation services is particularly demanding in a province like Saskatchewan that is characterized by vast distances, sparce populations, and large volumes of goods that must be moved.

Good business practices are essential to achieve the best return from public funds committed to transportation. The department has undertaken various strategic planning activities to improve the effectiveness and efficiency of transportation services throughout the province.

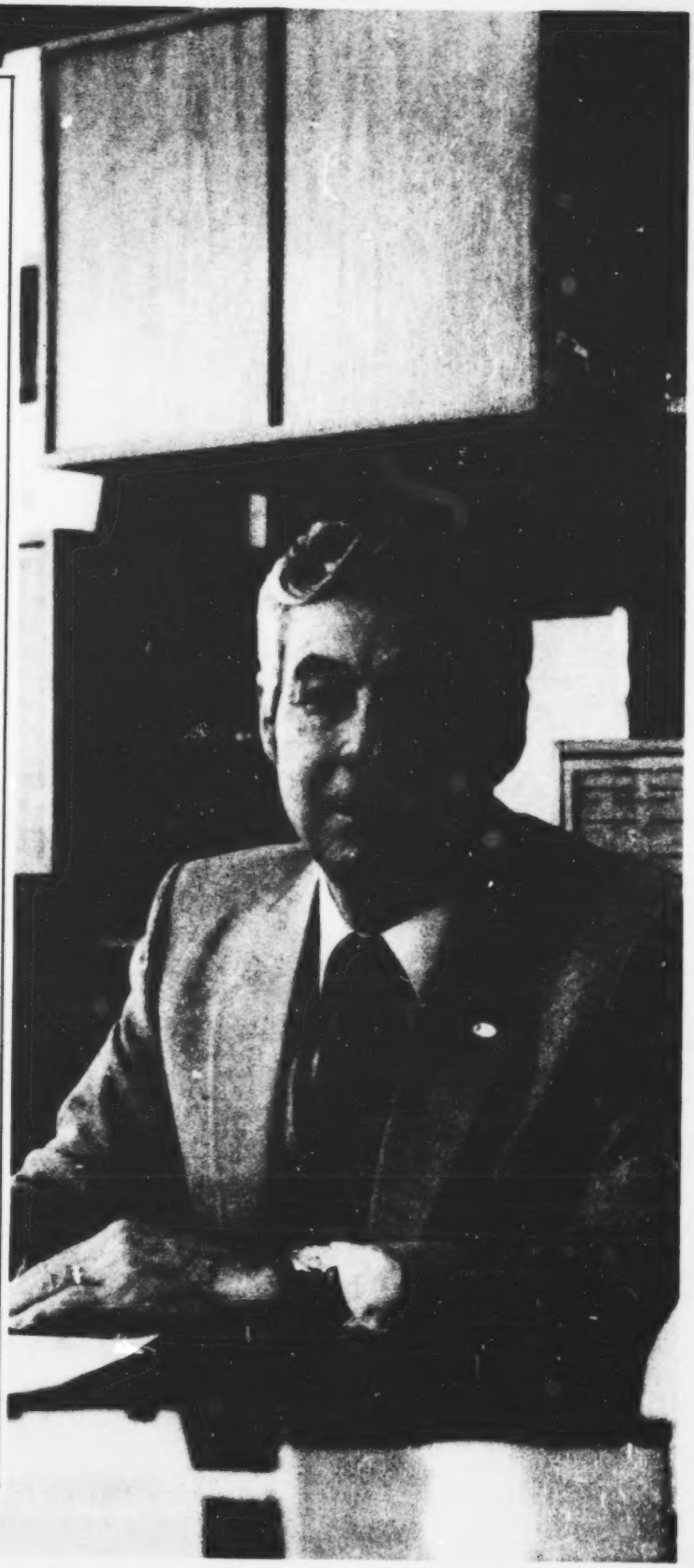
Continued emphasis is being placed on a long range management development plan to meet the ever growing need for highly competent staff. We must, however, not only be concerned with our own organizational competence for program delivery. It is most vital that staff are cognizant of changing public transportation desires and demands that will influence our future goals and objectives.

Energy conservation is a major challenge facing everyone and the department has been working diligently to devise methods to achieve this goal. Our actions range from research in highway construction and maintenance operations to energy savings that will directly benefit the travelling public.

Department staff at all levels are to be complimented for their dedicated service to meet the department's goal of providing a safe and efficient transportation system that will contribute to the economic and social development of Saskatchewan.

Respectfully submitted,

J.R. Sutherland
Deputy Minister
Saskatchewan Highways and Transportation



Senior Department Managers

as of March 31, 1982

M. F. Clark
Associate Deputy
Minister (Engineering)

J. A. Schwartz
Director
Support Services

G. T. Stanger
Road Design
Engineer

H. A. Eley
Materials
Testing Engineer

B. D. Martin
Maintenance/Principal
Geotechnical Engineer

G. Herman
Surfacing Engineer

A. I. Mascher
Director
Management Services

J. B. Turnbull
Director
Surveys & CSMA

R. M. Reavley
Director
Personnel

P. Fitzel
Director
Financial Services

R. W. Culley
Director
Research

J. Palaschuk
Director
Equipment

Planning

Planning Branch has the mission of identifying and assessing present and long-range transportation demands, and developing, recommending and monitoring strategies and capital programs within the Department. The entire transportation system and its interrelated components are taken into account to provide the implications on various modes.

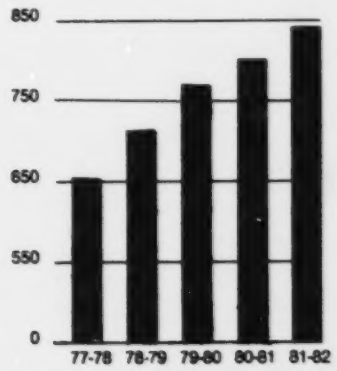
Necessary liaison was maintained with federal and provincial agencies on subjects related to transportation. This involved both standing committees and ad hoc meetings.

Transportation Planning and Programming

Major accomplishments during 1981-82 were:

- Development of ten-year objectives for departmental delivery programs by the utilization of workshop consisting of senior staff.
- Completion of a study to examine the long-range effects of various capital program levels on the provincial highway system.
- Development of the 1981 edition of the 1982-83 and five-year capital program and budget.
- Study of the effects of heavy crude oil development on traffic on the provincial highway system.

Vehicle Registration in Saskatchewan
Thousands



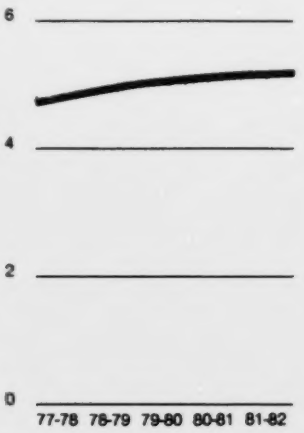
- Study the need of four-laning the provincial highway system.

Traffic Research

Traffic research section of Planning Branch is responsible for obtaining information and providing research for management within the Department on matters related to highway traffic. This often involves obtaining the data in the field. During 1981-82 some of the activities were:

- Obtaining traffic volume counts on the provincial highway system. Travel in this system was determined to have increased 3.7 per cent from 1980 to 1981.
- Studied vehicle speeds on selected highways. On highways with 100 km/h speed limits, 60.8 per cent of all vehicles exceeded the speed limit.
- Studied recreational vehicle utilization on provincial highways. The most popular recreational vehicle was a passenger car towing a camper. The highest percentage of recreation vehicles occurred in July, with the average speed of a recreational vehicle being 9 km/h slower than a passenger car.
- Studied and predicted future trends in automobile, truck and recreation travel.
- Studied truck weights and commodities at selected locations on the provincial highway system. The most common truck was the five-axle semi-trailer, which comprised 40 per cent of trucks studied. Petroleum products, construction materials, agricultural products and heavy machinery were the most predominant commodities being hauled. Gross truck weights have increased by about 15 per cent from 1979 to 1980.
- Miscellaneous traffic studies dealing with intersections, highway capacity and pedestrian movements.

Travel on Provincial Highways
Billion Vehicle Kilometres



Urban Transportation

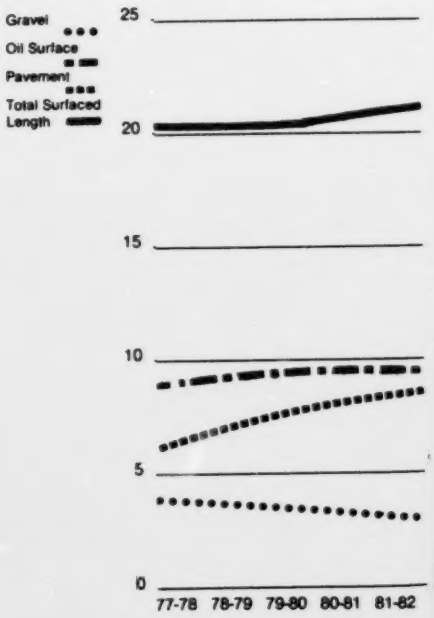
The urban transportation section of the Branch is responsible for recommending policy related to the cost-shared Urban Assistance Program. Additional areas of involvement are with urban transportation studies and the preparation of the annual urban assistance budget.

In 1981-82 the demand for funds in the Urban Assistance Program was very high. Major projects on which funds were used were Circle Drive, including the 42nd Street Bridge in Saskatoon, and the Lewvan Expressway in Regina.

Other activities were:

- Providing technical liaison with other provincial agencies and other levels of government in developing cost-shared programs.
- Providing technical guidance to cities involved in cost-shared studies to improve the prediction of future budget demands.

Provincial Highway Surfaces
Thousands of Kilometres



Traffic Safety Engineering

The basic objective of the Branch is to reduce traffic accidents in Saskatchewan by managing the following activities:

- Administration of access control to Provincial Highways.
- Study and recommend appropriate levels of speeds on provincial highways.
- Manage a central traffic accident information system for the province.
- Develop and priorize an annual traffic safety improvement program for Provincial Highways.
- Carry out traffic accident and traffic engineering studies.
- Design, order and administer all traffic signs.
- Traffic safety education.

The Department's Highway Safety Improvement Program is providing positive results. During the past eight years (1974-1981) the injury accident rate decreased by 45 per cent and the fatal accident rate decreased 36 per cent. Injuries and fatalities on Provincial Highways decreased by 28 per cent and 23 per cent, respectively.

Installation of guardrail at bridge abutments continues to be a high priority. Channelization, approach flattening, breakaway sign posts, flashing lights and spot improvements improve highway safety and pay dividends. A forgiving highway environment either eliminates or reduces the severity of traffic accidents. In 1981, $1.47 million dollars were spent on the capital safety improvement program.

Traffic Accident Information System

The Provincial Traffic Accident Information System (T.A.I.S.), designed by the Department, completed its third year of successful operation. Detailed information about 134,000 accidents is stored in computer files.

The primary purpose of T.A.I.S. is to identify inadequacies of drivers, vehicles and roadways so that actions can be taken to reduce the losses due to traffic accidents. To meet this objective, 90 output reports have been designed to provide accurate and timely information to users on a monthly, quarterly, yearly and special request basis. Over 400 reports were produced on a regular basis. Testimonials from the users of T.A.I.S. data indicate that the information they receive is saving them time, as well as providing relevant data as to where and how traffic accidents are occurring. Urban and rural municipalities use the information to locate and review accident-prone locations.

Monthly accident summaries are distributed to interested agencies. Frequent news releases and a newsletter are other ways that the public is kept informed about traffic accident facts. 4,000 copies of the 1981 annual accident report are distributed. This report contains detailed information, summaries, listings and analysis of traffic accidents in Saskatchewan. A pamphlet about T.A.I.S. was published.

In 1981, private property accidents are not entered into T.A.I.S. because there was little demand by the users. A comprehensive analysis of 1980 private property accidents was completed as a base for those agencies that needed this specialized information.

A Truck Accident Study was carried out with the aid of T.A.I.S. This special report was prepared for the Saskatchewan Advisory Council on Transportation.

Traffic Control Devices

Traffic control devices are important safety features. The Branch manages the uniformity, legibility and application of traffic signs and signals. Signs are designed and ordered through an outside supplier. Railway signals are priorized and the need for urban traffic signals are studied by the Branch. A policy for Agribusiness Signing has been developed as part of the ongoing program to improve information for motorists.

Safety Activities

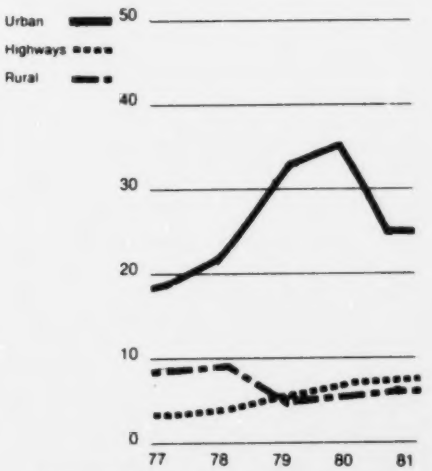
In 1981, 66 per cent of all traffic accidents occurred on urban streets, so the Branch continues to concern itself with urban traffic safety. A series of five two-day Urban Traffic Safety Workshops have been implemented together with a 250-page manual.

The Department provides financial assistance for safety improvement in communities.

The Seat Belt Survivors Club is an educational program that illustrates vividly the benefits of using seat belts. 1,600 persons have given personal testimonials about the way seat belts saved their life or reduced injury. Other jurisdictions have made enquiries about the club and some have started similar programs.

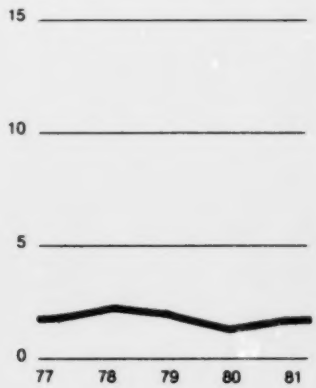
The Branch has worked closely with Saskatchewan Safety Council and other organizations to develop and implement traffic safety programs. The Branch is also a resource for speakers, literature, information and audio-visual materials.

Total Number of Accidents By Road System (x 100)



* includes private property, other locations
**included in road categories prior to 1979

Highway Fatal Accident
Fatal Accidents/Hundred Million Vehicle Kilometres



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Traffic Safety Engineering Branch continued

Highway Accident Rate

Accidents/Million Vehicle Kilometres

Injuries By Road System

Year	1977	1978	1979	1980	1981
Highways	1,902	2,143	2,318	2,407	2,266
Rural	3,272	2,727	1,616	1,684	1,772
Urban	4,069	3,987	4,685	4,301	4,350
Other			462	492	272
Total	**9,243**	**8,857**	**9,081**	**8,884**	**8,660**

Fatalities By Road System

Year	1977	1978	1979	1980	1981
Highways	126	150	143	140	139
Rural	118	109	55	62	67
Urban	20	37	64	43	49
Other			28	20	7
Total	**264**	**296**	**290**	**265**	**262**

Works

The Organization

Works Branch consists of 16 construction crews and a small head office group, making the branch a major employer. The organization includes a director, crew co-ordinators who supervise construction activities and office staff.

We work towards achieving a good working environment where people can develop their skills and find work satisfying. Our employees' dedicated efforts in successfully completing this year's operations are appreciated.

The Employees

During the peak operating season, our branch employee total varies between three and four hundred. These include equipment operators, plant and vehicle operators, cooks, safety personnel, administrative personnel and supervisors. Our operations often require people to be away from home for long periods of time, working out of highly mobile self-contained camps. Many employees are Native Northerners and/or Northerners.

The Operation

Works Branch has four main function areas: earth moving, surfacing, bridges and winter road construction. Our branch provides these and other specialized construction services for our own and other government departments and agencies.

Work Branch crews often carry out non-routine construction projects, such as:

- high-risk in cost terms
- emergency highways and bridge repairs
- potential for unforeseeable problems (one-of-a-kind jobs)
- use of new or trial technology

Works Branch provides the Department an alternative to the usual contract procedure when risk factors escalate bid prices beyond available funds.

The branch also assists in the training and development of small northern contractors within the Northern Administrative District. Each year bid hourly and regular contracts allow small northern contractors to work alongside a Works Branch construction crew.

Works Branch staff have helped develop many new construction procedures: placing large, precast concrete bridge decks, sand-sulphur-asphalt road maintenance, rubber-asphalt surfacing, special equipment and techniques for northern winter road construction.

Grading Section

Grading crews this year continued working on three major projects. The southern crew continues work on Highway 6 between Gronlid and Choiceland. In the fall our southern crew moved to Wakaw and started work on 312-01. One northern crew continues work on Highway 2 north of La Ronge and at the La Ronge Airport. The other northern crew continued to work on Highway 155 between Buffalo Narrows and La Loche.

This year our three grading crews moved 1 353 000 m^3 of earth excavation.

Bridge Section

During 1981-82 the Department's seven bridge crews built 32 new bridges and repaired 147 others.

The Department's bridge decking equipment re-decked two overpasses. Re-decking was carried out on the overpass at the Junction of 1 and 6 in Regina and on the railway overpass on Highway 10 at Melville.

And an overlay was placed for the City of Saskatoon on the overpass on Circle Drive.

Surfacing Section

Surfacing crews completed numerous road and custom work projects throughout Saskatchewan this year. Projects included oil treatment, AMOS treatment, lime stabilization, rubber-asphalt-seal and thermo-patching. Operation Open Roads II and Operation Mainstreet II was started this year.

Crews used both traditional road mix operation methods and the drum mix method in the production of the asphalt mixes.

Winter Road

The winter road to Uranium City is much shorter since crews completed the all-weather road to Cluff Lake. We have reduced risks for employees working on this project by improving ice road location and surveillance methods. As well, changes in equipment design now ensure that large equipment constructing or maintaining the road either floats or will provide the operator time to leave the unit should it break through.

The operation of the winter road was extended another ten days this winter to accommodate the people of Uranium City.

Training Recruiting

We completed several employee training programs this year. Courses in air brake, management and safety training accounted for nearly 205 man-days of classroom instruction.

continued next page

Works continued...

Works Branch provides opportunities for northern people to learn and work at road construction. Two programs help achieve this goal. We are now helping train northern contractors in all aspects of road construction. Training, usually tied in with our own projects, demands a substantial time and effort commitment from our superintendents and staff.

The second program involved recruiting northern people through the Native Norsask Outreach Offices. Already a significant portion of our northern crews are native northerners. We will continue recruiting through Outreach in 1982-83.

Works Branch crews had a busy season in 1981, completing 211 kilometres of rubber-asphalt sealing.

Public Communications

The function of Public Communications Branch is to plan, co-ordinate and monitor information programs to foster understanding and acceptance of department policies and programs.

To achieve this function, branch staff work in four primary areas. They include the printing and production of official and statutory publications; planning, writing and distributing public information materials; monitoring public opinion about department policies and activities; and providing technical expertise to assist department staff with public communication activities.

Official and Statutory Publications

The Official Highway Map of Saskatchewan continues to be the most major publication handled by the branch. In 1981-82, there were 600,000 maps printed and distributed. A 32 per cent increase in the cost of printing the 1982 map, as compared with the 1981 map, has caused some concern about future volumes.

To maintain costs associated with the printing of the department's annual report, the volume was reduced from 3,000 to 2,000 copies. This change was made following an examination of mail lists and other distribution methods.

The department's annual construction map continues to gain popularity with more requests for this publication being received annually. Consideration will be given in the future to printing 10,000 copies of this map as compared with the 7,000 that have been printed for the past three years.

Branch staff again produced the annual Traffic Accident Information report. This report is becoming increasingly popular.

A major public relations undertaking during the year resulted from a three-day visit to Saskatchewan by a delegation of highway engineers and officials from the People's Republic of China. This was the first time any of the delegates had been outside their own country and none could speak English, except for one delegate who served as a translator and one translator from Transport Canada.

Public Opinion

Public opinion about the department appears to be very good with very few major complaints received during the year. Staff distributed nearly 630,000 pieces of information and handled over 3,300 telephone inquiries.

Other areas in which favorable comment was received about department activities came from meetings with community officials, plus officials of organizations, such as SARM, Northern Outfitters and various tourist associations.

Future Strategies

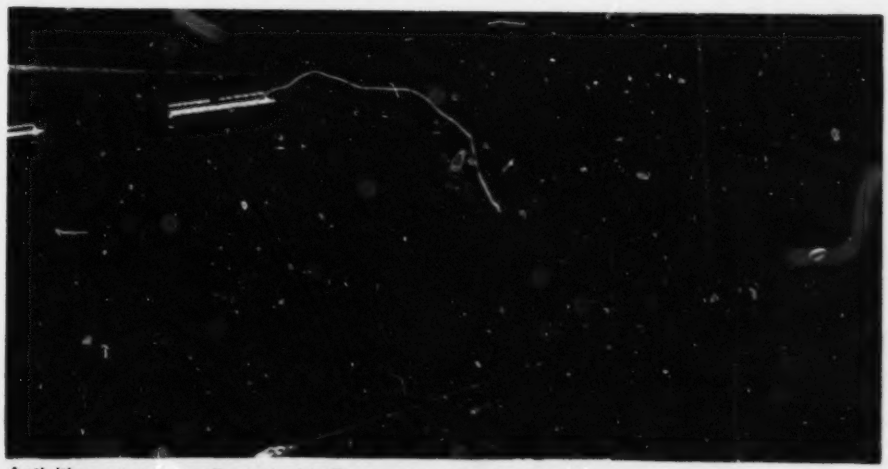
Public communication continues to be an important aspect of department operations. Increased costs are of growing concern and this will create a need to closely examine future activities and the methods in which tasks are carried out.

During December, 1981, branch staff completed the first electronic transfer of text material from computer to typesetter using the telephone. With the department increasing its word-processing capabilities the branch will be able to make greater use of transferring text materials electronically rather than re-keyboarding material which is time-consuming.

Public Information

Public information activities again kept staff exceptionally busy during the 1981-82 fiscal year. There were 133 news releases distributed, 18 radio and 12 television interviews arranged, and 13 feature stories about department activities prepared for specialty magazines.

Staff also participated in the production of three audio-visual slide presentations about department activities, produced 30 informational pamphlets, and planned or assisted with staging 11 official opening functions.



Activities were co-ordinated with Government Services in February to conduct an official opening program at the new Yorkton Repair and Maintenance Shop. More than 300 people turned out for the function.

Operations Division

The Operations Division staff are responsible for implementation and administration of operational programs and management of the designated provincial transportation facilities for the Department within the specified levels of service and resources. Good weather prevailed during the spring and summer, which permitted excellent progress on most of the division activities. Increased precipitation in the late summer and fall, however, resulted in the carry-over of several projects.

Operation Open Roads II and Operation Main Street I commenced this year with 75 kilometres of access roads oil-treated and the main streets of 10 communities completed.

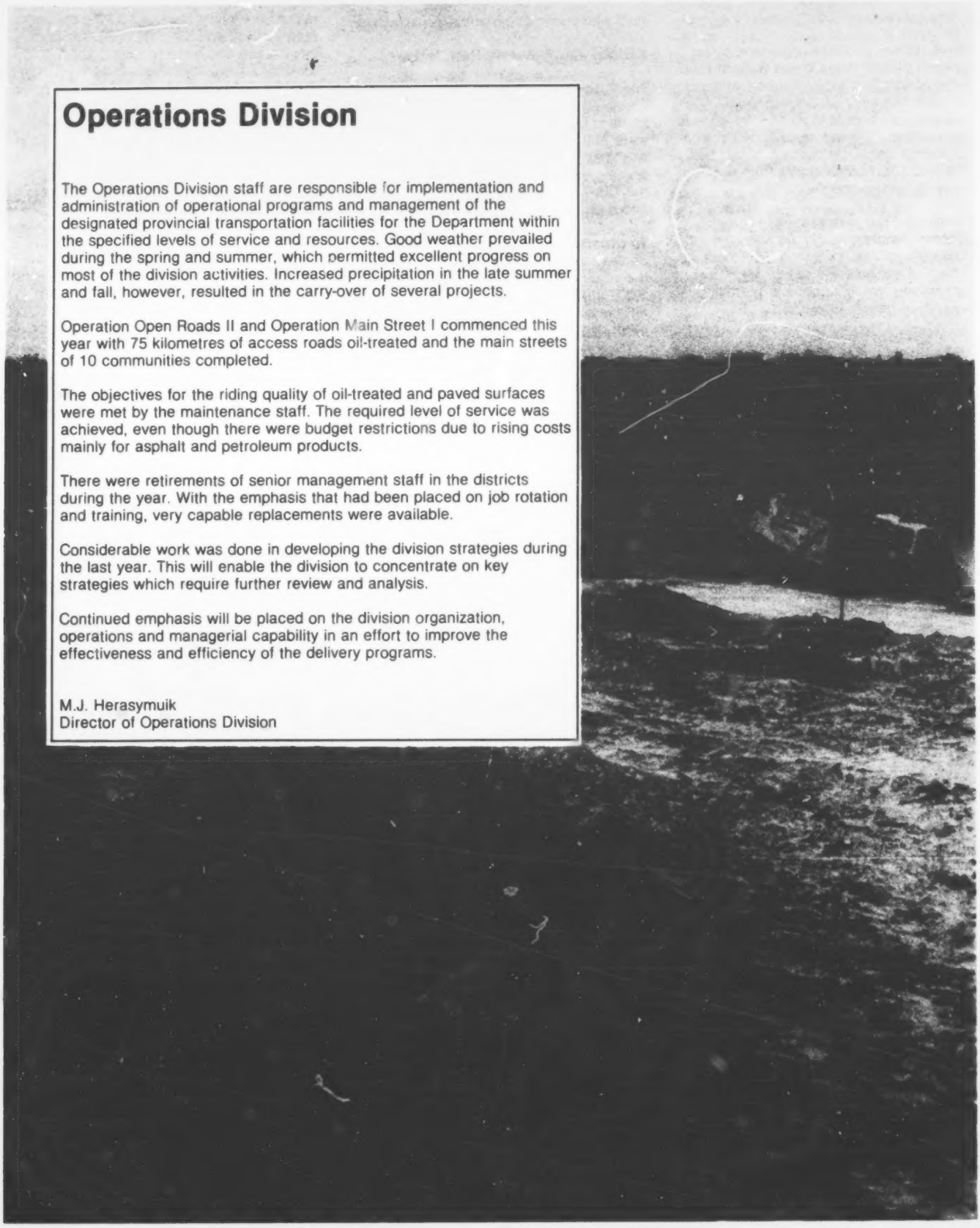
The objectives for the riding quality of oil-treated and paved surfaces were met by the maintenance staff. The required level of service was achieved, even though there were budget restrictions due to rising costs mainly for asphalt and petroleum products.

There were retirements of senior management staff in the districts during the year. With the emphasis that had been placed on job rotation and training, very capable replacements were available.

Considerable work was done in developing the division strategies during the last year. This will enable the division to concentrate on key strategies which require further review and analysis.

Continued emphasis will be placed on the division organization, operations and managerial capability in an effort to improve the effectiveness and efficiency of the delivery programs.

M.J. Herasymuik
Director of Operations Division



Operations Branch

The Operations Branch provided executive, technical and financial services to the Operations Division. Major activities of the branch include:

- Management of centralized activities related to tendering, scheduling and contract administration.
- Development and control of Department one-year programs and budgets.
- Administration of purchasing construction and maintenance materials.
- Co-ordination of cost-shared programs.

Construction Tenders

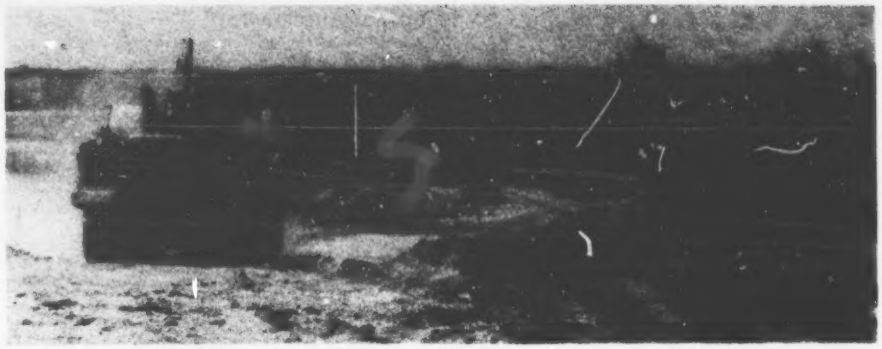
Seventy-one construction tenders valued at $42.8 million dollars were awarded during 1981-82. In comparison with the previous year, three fewer tenders were issued; there was, however, a $500,000 increase in the value of contracts awarded.

Contracts are tendered throughout the year to provide a balanced workload for contractors. In the fall and winter the heavy emphasis is on stockpiling work so that much of the hauling can be done in the winter to minimize damage to haul routes.

Unit bid prices for earthwork increased, while unit prices for surfacing items were in line with the bid prices received in the previous year.

Grading

The amount of earth excavation work completed during the year was 9 922 547 cubic metres.



There were 495 kilometres of new construction completed, with 34 kilometres grading work underway at year end.

Surfacing

The quantity of bituminous mix used on contracts in 1981-82 decreased to 305 860 t from 323 411 t. The quantity of sub base and base material used in 1981-82 was 1 702 859 t, compared to 1 908 618 t in 1980-81.

During the year 217 kilometres of oiling, 66 kilometres of A.M.O.S., 198 kilometres of rubber asphalt surface and 393 kilometres of pavement were completed.

Urban Transportation Assistance Program

Under the Urban Street Assistance Program, $16.7 million was provided to assist 54 communities to improve streets.

A total of $100,078 in financial aid was provided to 63 communities under the Urban Safety Program.

Airport Assistance Program

Thirty local governments participated in the Southern Airport Assistance Program administered by the Branch. Under the program the Department provided $170,068 in assistance.

Other Highlights

In the Rural Transportation Assistance Program $103,543 was spent on six pilot projects.

Automatic railway crossing signals were installed at five locations during the year.

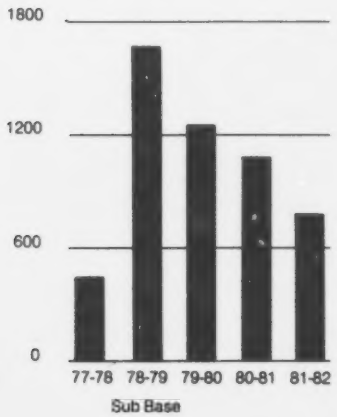
Community access lighting was installed at 44 locations during the year at a cost of $124,000.

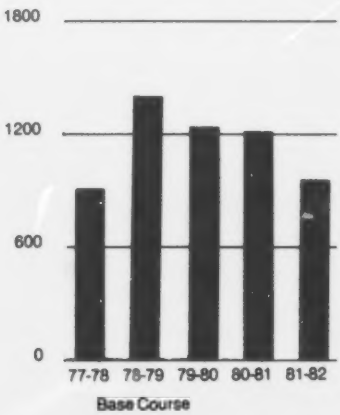
101,123 calls were handled on the Department's Hotline Winter Road Information Service.

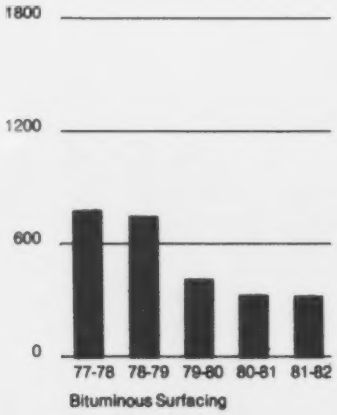
320 purchase orders for construction and maintenance materials valued at $37,000,000 were processed.

6,687 payments to contractors were processed, totalling $52,203,000.

Surfacing Quantities
Thousands of Tonnes

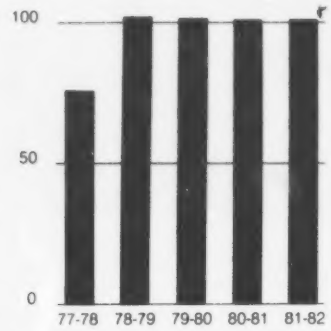






Capital Expenditures

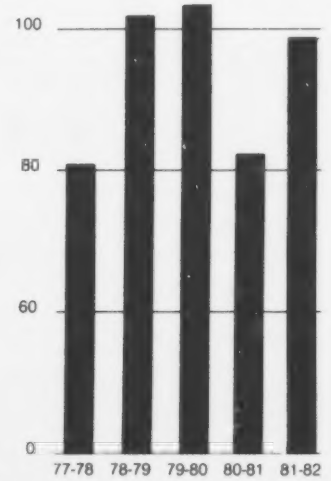
Expenditure - Millions of Dollars



Construction

Unit Bid Prices for Earth Excavation

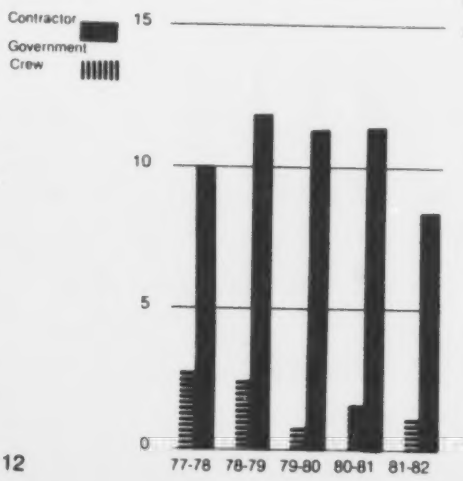
Cents Per Cubic Metre



Earth Excavation - Compaction

Earthwork

Millions of Cubic Metres

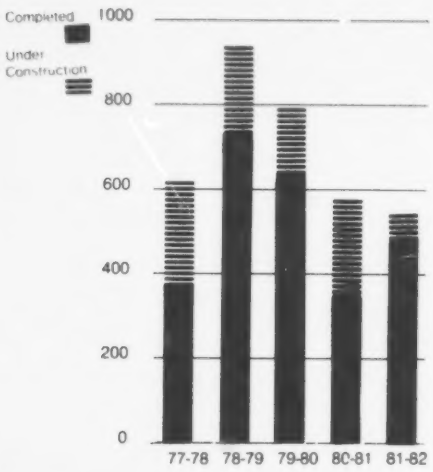


Road Improvements

(On main highway system, auxiliary roads, park access roads and urban highway connections.)

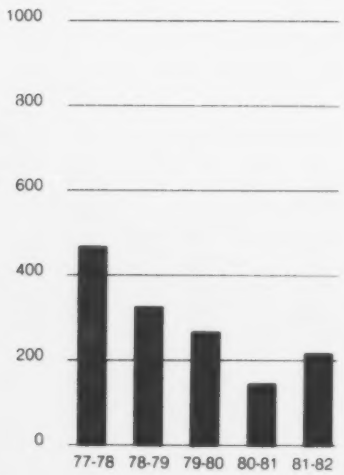
Grading

Kilometres



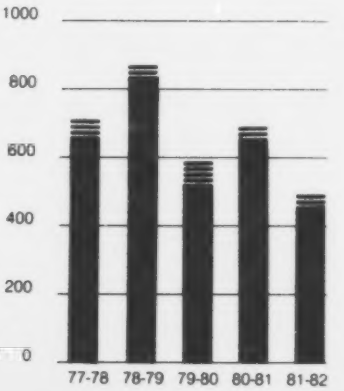
Oil Treatment

Kilometres



Paving

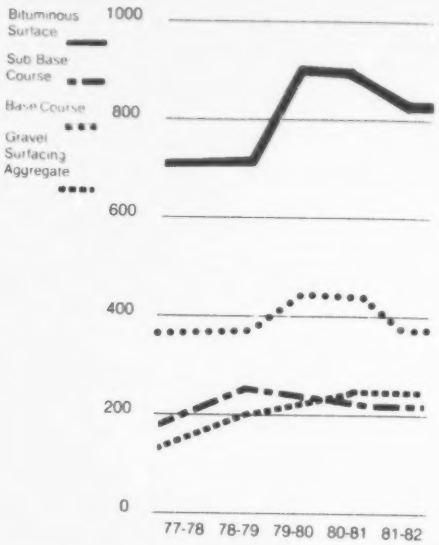
Kilometres



Unit Bid Prices

(Weighted on basis of tender quantities less haul in place)

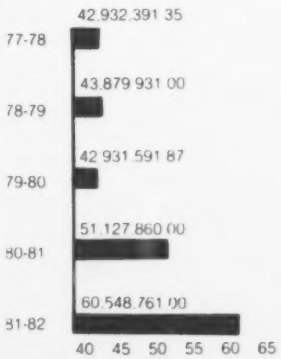
Cents Per Tonne



Total Maintenance Expenditure

General Services and Provincial Highways

Expenditure - Millions of Dollars



Bridge

The Bridge Branch's mission is to design, construct, maintain and manage the bridge component of the Department's road transportation system, and to provide a source of structural and bridge-related expertise for other department and government units, to established levels of service and within available resources.

Construction

Rehabilitation work was carried out on the three steel trusses of the south bridge over the North Saskatchewan River between Battleford and North Battleford. The work consisted of reconstruction of the deck, strengthening of the floor system, and cleaning and repainting of the lower portions of the steel work.

Deck resurfacing, using dense concrete overlays, was completed on the railway overpass on Highway 10 near Melville and on the northbound overpass of Highway 6 over 1 near Regina.

Projects undertaken by department crews included 18 capital works, 88 repair jobs and 20 bridge barrier improvements.

Other Activities

Preliminary studies were undertaken for the design of the proposed joint Saskatchewan-Alberta bridge over the North Saskatchewan River on Highway 17.

The aluminum rail system on the 223-metre North Saskatchewan River bridge on Highway 3 was repaved with a galvanized tubular steel rail system as part of the continued emphasis on safety.

Structural advice was provided to the City of Saskatoon, at their request, for load rating of the Idylwyld Freeway structures and for a concrete bridge deck overlay on Circle Drive. Inspection and advice were also provided to the City of Regina on requirements for deck improvements on some of their existing concrete bridges.

Assistance was provided, upon request, for design of bridges for Department of Northern Saskatchewan at Dillon, for Department of Tourism and Renewable Resources at the Moose Jaw Wild Animal Park and for the Wapawekka Hills pulp haul road.

Work is continuing on the new highway bridge spanning the North Saskatchewan River on Highway 17 north of Lloydminster. This project is being cost-shared with the Government of Alberta and is expected to cost $8 to $10 million by the time it is completed.

Work started in 1980 to restore the deck and repaint the two bridges spanning the North Saskatchewan River between the Battlefords continued during the year. The project is expected to be completed in 1983.

Highway & Control Section Number	Location	Description of Work	Contractor
2-23	On 13-67-24-2 over Highway Creek southwest of Junction with P.H. 165	Major repairs to 18 metre 3 span pile bridge	Department Crew
2-26	On 4-73-21-2 over Nemeiben River north of LaRonge	Complete construction of 30 metre 2 span pile bridge with precast concrete deck	Department Crew
3-03-22	On 35-49-9-2 over Papikwan River east of Carrot River	Construct 24 metre 2 span pile bridge with precast concrete deck	Department Crew
3-03-22	On 36-49-10-2 over Carrot River east of Carrot River	Install new galvanized steel rail system on 84 metre 7 span pile bridge	Department Crew
3-18	On 28-52-25-3 over North Saskatchewan River west of Paradise Hill	Install new galvanized steel rail system on 222 metre 4 span plate girder bridge	Department Crew
4-13-70	On 32-43-16-3 over North Saskatchewan River near North Battleford	Deck betterment to 183 metre 3 span steel truss bridge	Carlson Sandblasting & Coatings Ltd. and Department Crew
4-18	On 3-63-18-3 over Waterhen River north of Dorintosh	Install new galvanized steel rail system on 49 metre 4 span pile bridge	Department Crew
6-4	On 36-16-20-2 over No. 1 Highway south of Regina	Deck betterment to northbound 65 metre 4 span concrete T-Beam bridge	Department Crew
6-15	On 19-51-17-2 over Whitefox River south of Choiceland	Complete construction of 45 metre 3 span pile bridge with precast concrete deck	Department Crew
10-4	On 30-22-6-2 over C.N.R. just west of Melville	Deck betterment to 54 metre 3 span concrete T-beam bridge	Department Crew
13-12	On 31-8-5-3 over Wood River west of LaFleche	Deck betterment to 43 metre 3 span reinforced concrete T-beam bridge	Department Crew
13-18	On 9-3-30-3 over Lodge Creek west of Govenlock	Install new galvanized steel rail system in 30 metre 3 span pile bridge	Department Crew
15-11	On 9-29-8-3 over South Saskatchewan River near Outlook	Major repairs to 348 metre 5 span steel truss bridge	Department Crew
35-2	On 8-5-14-2 over Jewel Creek north of Tribune	Construct 36 metre 3 span pile bridge with precast concrete deck	Department Crew
43-3	On 28-11-12-3 over Creek east of Neville	Widen existing 6 metre pile bridge	Department Crew
106-01	On 17-54-18-2 over Torch River north of Smeaton	Install new galvanized steel rail system on 40 metre 3 span pile bridge	Department Crew
106-03	On 1-64-11-2 over Puskwakau River east of Junction with P.H. 165	Install new galvanized steel rail system on 30 metre 3 span pile bridge	Department Crew
120-02	On 24-55-22-2 over Torch River north of Meath Park	Major repairs to 24 metre 3 span pile bridge	Department Crew
155-03	On 9-82-18-3 over Taylor Creek north of Buffalo Narrows	Construct 6 metre pile bridge	Department Crew
155-03	On 21-84-19-3 over Bear Creek south of Buffalo Narrows	Construct 12 metre pile bridge with precast concrete deck	Department Crew
155-04	Over Clearwater River north of LaLoche	Deck betterment to 46 metre steel truss bridge	Department Crew
376-03	On 31-40-12-3 over North Saskatchewan River south of Maymont	Deck betterment to 315 metre 4 span welded plate girder bridge	Department Crew

Department crews assisted with the District's Safety Program by installing concrete barrier systems at 3 bridges.
A total of 88 bridges of various sizes were repaired by Department Crews.

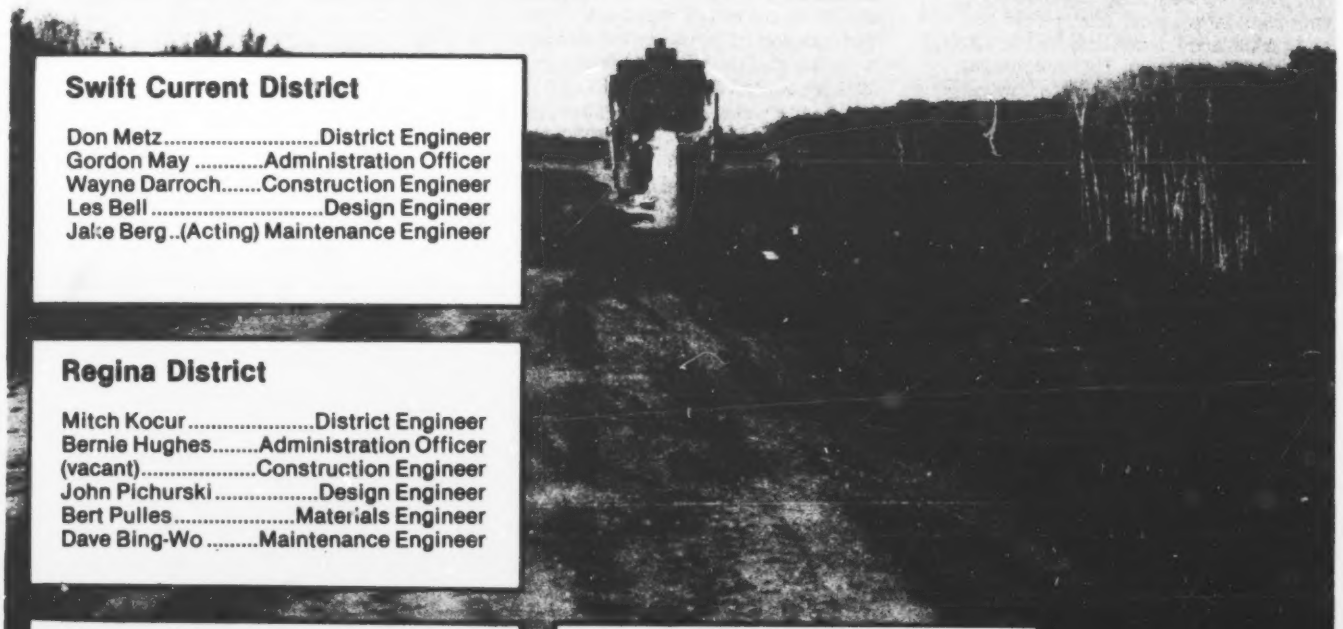
District Offices

(as of March 31, 1982)

Minister
James W. Garner

Deputy Minister
J.R. Sutherland

Director of Operations
M.J. Herasymuik



Swift Current District

Don Metz.....District Engineer
Gordon May .....Administration Officer
Wayne Darroch.....Construction Engineer
Les Bell .....Design Engineer
Jake Berg ..(Acting) Maintenance Engineer

Regina District

Mitch Kocur.....District Engineer
Bernie Hughes.....Administration Officer
(vacant).....Construction Engineer
John Pichurski.....Design Engineer
Bert Pulles.....Materials Engineer
Dave Bing-Wo .....Maintenance Engineer

Yorkton District

Carl Siegel .....District Engineer
Mel Fostey .....Administration Officer
Thomas Gutek.....Construction Engineer
Merv Gunderson .....Design Engineer
George Stamatinos .....Materials Engineer
John Dunlop .....Maintenance Engineer

Prince Albert District

J. Doug McMillan .....District Engineer
G. Willis Cunningham .....Admin. Officer
Norm Woodcock ....Construction Engineer
Terry Kudel .....Design Engineer
Allan Widger.....Materials Engineer
Joe Zbeetnoff .....Maintenance Engineer

Saskatoon District

Harold Bird .....District Engineer
Ernie Hunker.....Administration Officer
Vern Campbell.....Construction Engineer
Bob Krueckl.....Design Engineer
Neil Richardson.....Materials Engineer
Marcel Coquet .....Maintenance Engineer

North Battleford District

Ray Gerbrandt .....District Engineer
Vicki Serack.....Administration Officer
Ed Bobick.....Construction Engineer
Jim Labossiere .....Materials Engineer
R.C. Goodfellow .....Maint. Superintendent
Delbert Minter.....Design Engineer

Swift Current District

Once again excellent weather conditions allowed good progress on most construction and maintenance projects in the Swift Current area.

The highway system maintained by district forces includes 63 km of gravel surface, 2 636 km of oil treatment and 1 206 km of pavement, for a total of 3 905 km of highway.

Design and Testing

The design section is responsible for designing highway subgrades, safety improvement projects, illumination projects and miscellaneous projects for the special construction program. This section also operates the District Materials Laboratory.

During 1980-81, the design section staff completed 65 km of subgrade design and 80 km of preliminary survey. Soils laboratory staff processed 5,977 samples for gravel pit control, subgrade and pavement design, and construction contract administration.

Construction

The construction engineering section is responsible for the supervision of construction projects, the materials locations program and the supervision of cost-shared programs.

During the year 72 km of subgrade was constructed and 111 km was surfaced, which included 43 km of pavement, 26 km of recap, 23 km of AMOS and 19 km of oil treatment. In addition, a rubber asphalt seal was placed on 65 km of Highway 4 between Swift Current and Rosetown under the Rehabilitation Program.

The majority of the construction program was for upgrading of Highways 13 and 43. Also, grading began to extend the four-laning of the Trans Canada Highway from Beverley to Webb.

The materials location unit conducted a number of major searches resulting in the location of 295 900 cubic metres of sand and gravel.

Maintenance

The maintenance section produced 99 050 tonnes of bituminous mix (with the help of the Regina, Saskatoon and Yorkton district crews) and applied 592 km of seal coat (including 75 km of custom work). 255 tonnes of aggregate were produced by contract.

Maintenance forces used 231 000 tonnes of aggregate, 70 700 tonnes of bituminous mix and 15 250 000 litres of liquid asphalt to maintain the district highway system consisting of:

- 62.6 km of gravel surface
- 2 636.3 km of oil-treated surface
- 1 067.6 km of paved (two-lane) surface
- 138.9 km of four-lane paved surface
- 69.1 km of tourist facility roadways

In addition, maintenance forces lime-treated 14 km of weak or failed highway subgrades.

To accomplish this work, the district has 23 section crews and eight special crews in 20 communities throughout the district.

Regina District

The Regina District is responsible for 4 826.65 km of provincial and public highways, including 100.98 km of tourist facility access roads.

In addition to regular maintenance activities, major highway improvement work was performed on 817.69 km. The improvement work included subgrade, oil treatment, surfacing, rehabilitation and seal coat construction.

Construction and Maintenance

Construction crews graded 66.74 km, surfaced 87.85 km and oil treated 8.4 km of highways.

Maintenance crews produced 138 901 tonnes and applied 85 450 tonnes of asphalt patching mix, applied 615.7 km of seal coat, flushed 190.35 km of shoulders, seeded 462 hectares of grass and mowed 17 500 km of grass along shoulders and highway roadsides. Another 950 km were mowed on a contract basis.

In addition, a rubber asphalt surface was applied on 39 km in the Regina District.

Construction was started on new section maintenance headquarter buildings at Oungre and Willow Bunch.

Urban and Rural Assistance

Regina, Moose Jaw, Weyburn and Estevan received $4,009,289 under the Urban Assistance Program for street traffic safety improvements.

The City of Regina started major construction work on the Lewvan Expressway from 11th Avenue to 3rd Avenue and Saskatchewan Drive west of Angus Street.

Twelve urban centres under 5,000 population received $707,807 for street improvements. Another thirteen urban centres received $5,713 for traffic safety improvements. Six communities received $23,181 to develop, operate and maintain community airports.

Forty-seven out of 99 eligible communities received $20,600 to maintain oil-treated surfaces on main business streets.

Regina District continued next page

An early morning fire at Regina District resulted in considerable fire and smoke damage on January 27, 1982. Work was disrupted for a time while workmen repaired the damage.

Yorkton District

The year's major highlight was the construction of a new Maintenance Shop and Equipment Storage Building on Highway 9 north of the City of Yorkton, to accommodate the District Maintenance Operations.

April 30, 1981, saw the retirement of A.H. Vossen, District Engineer of the Yorkton District, after 33 years of service with Saskatchewan Highways and Transportation.

Design

The design section carried out 19.62 km of preliminary survey and 32.25 km of highway design.

In addition, one 12.86 km project was re-designed due to updated standards.

Construction

A fairly early spring start assisted the completion of all carry-over projects by mid-July. Increased precipitation during the late summer and fall caused a marked slowdown in grading progress, which resulted in carry-overs on two grading projects.

During the 1981-82 construction season, district staff supervised seven grading and three paving projects, which completed 57.22 km of grading, 31.00 km of pavement, 23.80 km of rehabilitation on pavement and 33.39 km of rubber asphalt seal coat for the Department in the province where 200.64 km of highway were sealed.

The total budget spent on capital projects supervised by the District in 1981-82 amounted to $13,882,964.

Maintenance

The maintenance section produced 66 500 tonnes of bituminous mix, applied a seal coat on 600 km of highway surface, and lime-modified 8.0 km of existing subgrade. An average pavement performance rating of 5.9 was attained on oil-treated surfaces.

The highway system maintained by district force includes:

- 229.56 km of gravel surface
- 1 185.51 of oil-treated surface
- 1 613.96 of paved surface
- 60.06 km of roadway within campgrounds and provincial parks.

Materials

The materials section has completed pavement designs for five surfacing projects amounting to a total of 121.07 km of roadway.

The Soils Preliminary Investigation Crew has completed the drilling and sampling of 56 km of gradeholes, 57 km of stratigraphy holes and 15 km of borrow testing for use in subgrade designs.

Gravel location crews located and tested four new gravel deposits and four new sand deposits, and restested 12 existing department-owned pits. Approximately 1 638 000 cubic metres of granular material was verified as a result of this work.

Public bodies and private individuals were issued 218 permits during the year, which resulted in 204 575 cubic metres of material being removed from department-owned pits. Construction and maintenance activities used 169 304 cubic metres of granular material in carrying out their annual work programs.

The district testing laboratory performed various tests on 4,362 material samples.

Regina District continued

Other Activities

Highway safety and miscellaneous special construction improvements included construction of left turn lanes at busy intersections, improving roadway alignments at dange. ›ots, raising highway subgrades across wet areas, improving road information signs, and flattening approach sideslopes. In addition, 24 intersections were delineated with one or two street lights. Guardrail was installed at five structure sites.

District staff successfully negotiated 214 property purchase and miscellaneous damage agreements. No property acquisition was required to be expropriated.

District Winter Road Information Service (Hotline) received a record 39,496 telephone inquiries between November 1, 1981, and March 31, 1982. The hotline was operated at Regina, Weyburn and Moose Jaw.

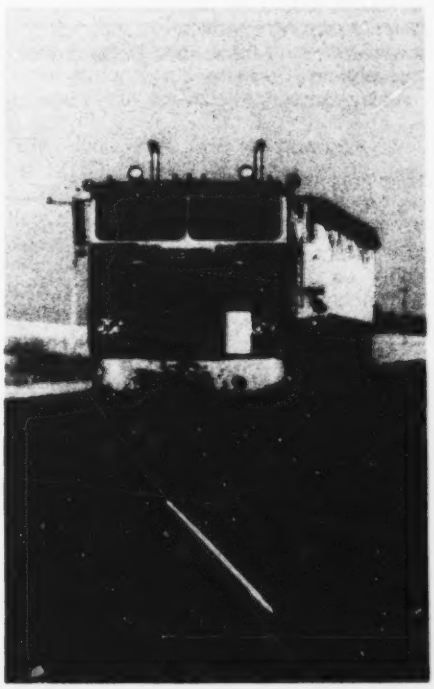
Under the Landscape Program 975 new trees and shrubs were planted at various sites.

Design and Testing

72.2 km of field survey, 85.9 km of subgrade design and 181.7 km of pavement design were completed.

550 000 m^3 of sand and gravel were tested and located. Construction and maintenance activities used 574 528 m^3 of sand and gravel. Public organizations and private individuals obtained 223 537 m^3 of gravel under 134 separate permits.

Transportation engineers are constantly being challenged by a shift in truck travel on the provincial highway system. In the mid 1970's nearly half the trucks were two axle units. This has now decreased to approximately one-third while fixed axle semi-trailer units now account for over 40 per cent of the trucks travelling on the highway system.



Saskatoon District

New buildings were erected during the year for the maintenance sections at Nokomis and Radisson.

Because of unusual conditions encountered north of Blaine Lake, special techniques were used to regrade Highway 12. Three 600-millimetre polyethylene culverts were installed to resist alkaline corrosion. A geotextile fabric was placed on Ashe Lake, an alkaline slough, over which the granular and earth subgrade was constructed. The method was used to counteract a very soft alluvial clay slough bottom.

An extensive environmental study was completed for a proposed extension of Highway 41 from Wakaw to Melfort.

The Saskatoon Road Information Hotline handled 25,113 phone calls throughout the winter.

Design

This section carried out 74 kilometres of field surveys and 82 kilometres of subgrade design. Several safety improvement projects were designed, including guardrails, intersection lighting and video-taping of hazardous locations.

Construction

Subgrade was constructed on 43 kilometres of road. Pavement construction involved 28 kilometres, in addition to 15 kilometres of oil treatment.

Twenty communities were assisted financially under cost-shared programs for upgrading of transportation systems. Another four communities were assisted through the Custom Work Program.

Maintenance

A variety of improvements were carried out:

Deep Patching	3 929 sq metres
Thermo Patching	99 km
Re-Oiling	33 km
Lime Treatment	12 km
Rubber Asphalt Seal Coat	15 km
Seal Coat on Paved Highways	97 km
Seal Coat on AMOS Highways	19 km
Seal Coat on Oiled Highways	187 km
Seal Coat on Base Course	16 km
Seal Coat on Subgrade	15 km
Pavement Shimming	8 km
Seeding Right-of-Way	213 hectares
Screening Aggregate for Ice Control	3 399 tonnes
Winter Maintenance	3 240 tonnes of sand
	4 110 tonnes of salt
	8 tonnes of CaCl

Maintenance costs were $6,125,629, of which $944,702 was for winter maintenance and $1,965,591 was for special maintenance projects.

Materials

Pavement for 12 projects was designed. Many specialized investigations were carried out, including site investigations, terrain analyses, quality control and miscellaneous engineering studies. Assistance was provided to students at the College of Engineering in their quest for knowledge in the highway field. The Materials Engineer conducted in-house training courses in Air Photo Interpretation, Soils Selection and Quality Control/Compaction.

Routine work included:

- 289 km of subgrade for design purposes
- 210 km of preliminary soils investigation
- 200 km of borrow pit testing
- 161 km of stratigraphic testing.

The District Testing Laboratory performed 20,231 individual tests on material samples.

The gravel section tested 30 new deposits and retested 25 existing deposits. This work verified 894,000 cubic metres of gravel and 936,000 cubic metres of sand. Cost of the work was $333,032, which will result in a savings in hauling of $1,223,410.

Cost shared funding under the department's Urban Assistance Program continues to provide important help for cities upgrading arterial and connector roadways. Projects are being cost shared in every city.

Total cost shared expenditures by the department in 1981-82 amounted to $16,819,660. The major demand for cost shared funding for roadway improvements continues to come from Regina and Saskatoon, the two largest cities in the province.

In Regina, work is continuing on the Lewvan Expressway, a project that will connect the Trans Canada Highway to Highway 11 on the west side of the city.

In Saskatoon, work is continuing on the Circle Drive Expressway which also includes a major new bridge to span the South Saskatchewan River at 42nd Street.

Prince Albert District

Good weather prevailing during the spring and summer permitted very good progress in all activities. Continuous rain in late September and during October resulted in delays and non-completion of a few capital projects. The District is responsible for 4 038 km of the highway system. This includes 1 477 km of pavement, 975 km of oil treatment and 1 586 km of gravel.

Design

During the year the design section completed 106 km of preliminary survey and 90 km of final design. A formal Environmental Impact Assessment was undertaken on the Hanson Lake Road in the vicinity of Big Sandy Lake.

Cost-Shared Program

A total of 16 communities participated in assistance programs that included Urban Assistance, Airport Assistance, Urban Safety and Operation Main Street.

Construction and Maintenance

Our construction engineering section supervised the completion of the following capital work:

Grading	104.5 km
- Earth Excavation	2 272 500 m³
Paving	41.0 km
- Bituminous Mix	NIL
- Base Course	127 100 t
- Subbase	65 000 t
Oil Treatment	126 km
- Lime Treatment and seal	21 km

The highlight of the construction season was the continued good progress on Highway 106, which involved the completion of 41 km of grading and 102 km of oil treatment.

Summer maintenance was normal with the exception of five highway sections where frost boil damage necessitated considerable extra repair work. During the winter months 12 incidents of rain required the use of 5 031 t of salt to remove the ice. This amount is about double the normal usage. The total maintenance expenditure for the year was $9,770,000.

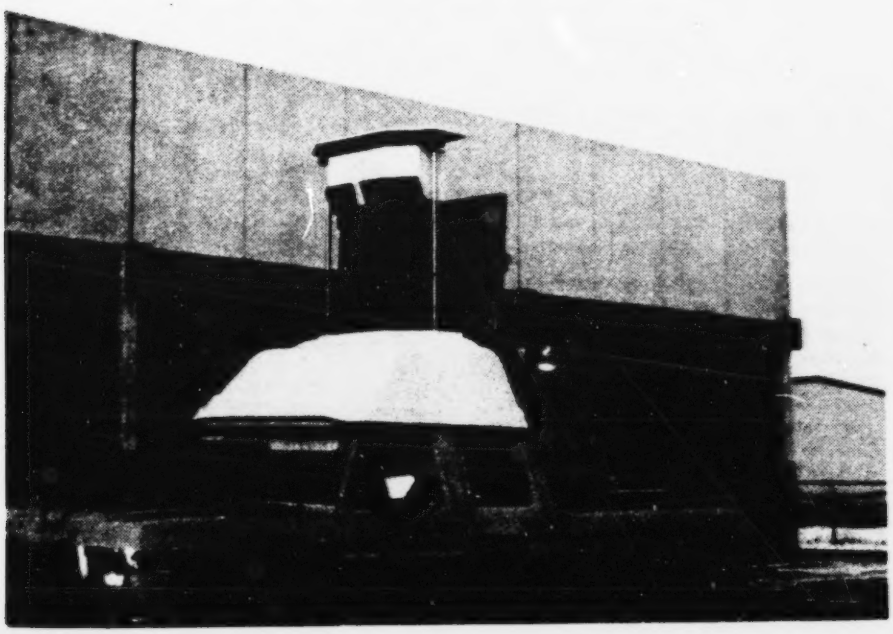
A new Equipment Storage Building was supplied at Shell Lake.

Materials and Testing

Gravel locations crews located and tested five new gravel deposits containing a total of 128 000 m³. Nine new sand sources were located and 27 existing gravel pits were retested. Soils testing was completed on 110 km of highway scheduled for upgrading. Landscaping work was completed on four depleted gravel pits. Considerable time was spend on the gravel salvage project associated with the new Nipawin Dam.

Highway upgrading in northern Saskatchewan continues to be of importance. In recent years considerable work has been completed in the western area of the province. This included many improvements to Highway 155 and the development of the all weather road from La Loche to Cluff Lake.

Work is being continued on Highway 2 north of La Ronge and on Highway 106 (Hanson Lake Road) from Smeaton to Flin Flon. Steady progress is being made on Highway 106 providing a good quality service for this northeast area of the province.



In 1976 the department funded the development of a mobile premarking unit utilizing a closed circuit television guidance system.

The orginal Mark I unit has now been updated. The Mark II model has an improved guidance system permitting coverage on roads up to 15 metres wide. As well, the paint capacity was increased to 125 litres and with the addition of bead guns the unit can be used as a striper for short sections such as at detours.

The new premarker is operated by two people and can operate at speeds up to 32 km/h for tangent sections and 10 km/h for sharp curves. The premarks can be adjusted from 5 cm to 120 cm long, and the distance between marks can range from 30 cm to 30 metres.

Patents have been obtained for the premarker in Canada and the United States and applied for in Australia, France, Japan, West Germany and the United Kingdom. Plans are also being examined to have the premarker manufactured under license.

North Battleford District

The North Battleford District is responsible for 3 139 km of the provincial highway system. In addition to regular maintenance, a number of improvement projects spread throughout the district were carried out in the 1981-82 year. The following indicates some of the major improvements along with highlights of the year.

Construction

During the year, 82 km of subgrade was constructed and 162 km was surfaced, including 72 km of hot mix pavement. Sixteen contracts were tendered to do the district's construction work.

Upgrading of the Yellowhead route between North Battleford and Lloydminster continued. Upgrading included the completion of shoulder widening between Maidstone and Lashburn and between Delmas and Paynton. Surfacing began on the newly constructed four-lane section west of Battleford.

Good progress was made upgrading Highway 155 north of Buffalo Narrows with construction complete to the Turnor Lake access. A pavement structure, including sidewalks, was constructed on the highway through Buffalo Narrows.

A pavement structure with curb and sidewalks was also constructed on Highway 26 through the Town of St. Walburg. Continued improvements on Highway 26 included surfacing from Meota to north of Edam.

Major surfacing was carried out on Highway 40 to complete the upgrading of this highway to the Alberta border. The surfacing includes the recycling of the old asphalt surface and should be complete early in 1982.

Other construction improvements beginning in 1981 included the paving of Highway 3 in the vicinity of Paradise Hill, the reconstruction of Highway 4 into Meadow Lake Park, reconstruction of Highway 17 north of Macklin, and the reconstruction of various sections of Highway 376 north and south of Richard. Surfacing was completed on Highway 55 from Pierceland to the Alberta border. Surfacing under the supervision of Alberta Transportation was completed on Highway 17 north of Highway 40.

Maintenance

In addition to normal roadway repairs, the maintenance section regravelled some 643 km using 125 500 tonnes of gravel. Twenty km were clay-surfaced and gravelled. 533 km of pavement, base course, oil treatment and subgrade were seal coated. Dust treatment using calcium chloride and dust-laying oil was done on 93 km, mostly in Meadow Lake Park. For snow and ice control, 6 000 tonnes of sand was screened, with 8 500 tonnes being spread on the road. 4 500 tonnes of salt and 13 400 gallons of Cal Treat were used for ice control.

Major expenditures were needed in maintaining the road to Cluff Lake but other northern gravel highways were considered to be in the best condition ever. An equipment building and trailer accommodation complex was constructed at Mile 116 north of La Loche. The complex was built by the Department of Northern Saskatchewan for department crews on the Cluff Lake Road. 1981 saw a major replacement and improvement in signs throughout the District.

Design

The design section completed the design of 109 km of highway, including the preparation of 11 grading tender packages. Major design efforts included Highway 26 north and south of St. Walburg, Highway 55 east of Green Lake and 304 west of Meadow Lake, Highway 16 east of proposed Meridian Bridge. A study to determine needed improvements to the Highway 4 and 16 interchange near Battleford was done to allow orderly development of the Town.

Shareable Programs

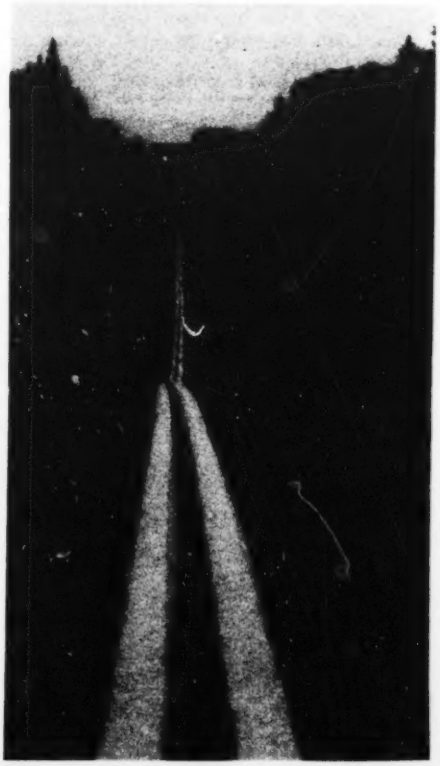
Major paving projects in St. Walburg and Meadow Lake were department-shared. Lloydminster received assistance for major projects on 52nd and 25th streets along with traffic signal installations. Eight communities were assisted in upgrading their traffic signs under the Urban Traffic Counter Measured Program. Under the Airport Assistance Program, Unity, Macklin and Lloydminster received operation and maintenance assistance with Macklin also receiving some development assistance. In North Battleford preliminary work for the southwest quadrant of their ring road was assisted.

Other Activities

Projects in the area of safety improvements included the flattening of approach slopes on Highway 4 south of Battleford and Highway 16 east of Lloydminster, upgrading of bridge rails with approach guardrail at six locations, and the installation of a flashing light on a breakaway post. Substandard curves on Highway 340 south of Hafford were upgraded to handle posted speeds. Two loadometer sites were constructed on Highway 4. Obsolete bridges on Highways 104 and 376 were replaced. Eleven delineation lights were constructed at various town accesses and highway junctions.

The main street of Denholm was oil treated under the Operation Main Street Program. Landscaping of a gravel pit north of Cochin began a program to landscape a number of these pits. In Meadow Lake Park, tourist facility improvements included a maintenance stockpile, campsite construction at Greig Lake and improvements of the eastern park entrance.

Continued excellent service provided by the district administration and equipment repair staff is again acknowledged.



Access roadways to rural communities are being oil treated under the department's Operation Open Road II program.

Construction Accomplishments in 1981-82

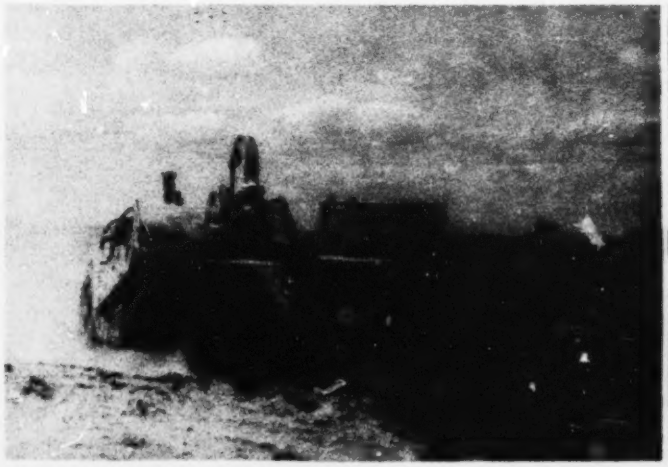
Control Section	Location	Grading		Surfacing						
		Comp.	U.C.	Pavement 'A'	Pavement 'B'	AMOS	Oil	Rubber Asphalt	Rehab.	U.C. 1. Pave 'A' 2. Pave 'B' 3. AMOS
All distances are expressed in kilometres										
1-13-10	Besant T.C.H. Campground						4.40			
1-19	Jct. 32 - Gull Lake		3.58							
2-2	Rockglen - Assiniboia	20.81			16.31					I. - 0.50
2-3	Assiniboia - Jct. 43	0.44								I. - 0.44
2-13-40	Zelma Access						12.41			
2-16-40	Cudworth Access	0.56								
2-25	LaRonge - Nemeiben River	23.64								
2-26	Nemeiben River - Otter Rapids	1.51								
3-3	Hudson Bay - Prairie River							9.60		
3-3-22	Carrot River - East	13.30								
3-11	Prince Albert - Shellbrook							7.43	0.25	
3-15	Spiritwood - Glaslyn				26.84					
3-17	West Jct. 26 - North Sask. River	6.55			6.55					2. - 16.34
4-5	Swift Current - South Sask. River							23.88		
4-6	South Sask. River - North of Sanctuary							15.59		
4-7	North of Sanctuary - South Jct. 44							18.03		
4-8	South Jct. 44 - Rosetown							7.00		
4-18	West Jct. 55 - Meadow Lake Prov. Park	10.97	3.12			18.20				3. - 2.34
4-18-10	Meadow Lake Provincial Park	0.30				0.30				
5-2-41	Mikado Access						0.20			
5-6	Watson - Humboldt							4.80		
5-7	Humboldt - North Jct. 2							10.62		
6-3-40	Parry Access						8.44			
6-13	Silver Park - Melfort							2.20		
6-15	Gronlid - Choiceland	23.19					23.04			
8-5	Moosomin - Qu-Appelle River	12.90								
8-9	Kamsack - Pelly	9.50	7.25							
9-5	Whitewood - Qu'Appelle River								19.55	
9-5-10	Qu'Appelle Valley Picnic Site				0.10					
9-6	Qu'Appelle River - West Jct. 22								4.25	
9-14	Bertwell - Hudson Bay							3.70		
11-1	Regina - Lumsden							4.42		
11-2	Lumsden - Bethune							15.36		
12-3	Blaine Lake - N.E. corner 34-47-83	11.84			0.42		3.02			
13-6	Weyburn - Jct. 28				29.60					
13-7	Jct. 28 - Jct. 6				1.63					
13-12	Lafleche - Kincaid	18.29								
13-15	Shaunavon - East End				32.86					
15-4	Melville - Jct. 52					4.20				
15-6	Leross - South Jct. 6	32.73								
15-13	Jct. 42 - Jct. 4				17.88					
16-25-41	Denholm Access						0.11			
16-27	Battleford - Bresaylor	8.98		1.10					11.78	
16-27-08	Service Roads	2.23								
16-28	Bresaylor - Maidstone	1.50		3.00					8.50	
16-28-40	Paynton Access	0.69					0.69			
16-29	Maidstone - Marshall			9.99					0.40	
16-29-08	Service Roads						0.53			

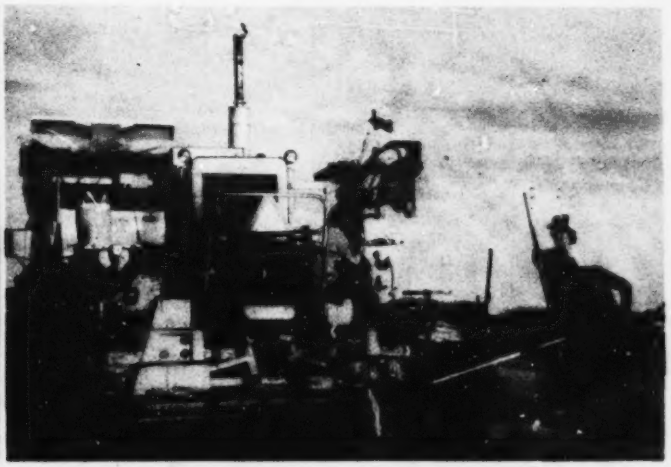
Construction Accomplishments in 1981-82

Control Section	Location	Grading		Surfacing						
		Comp.	U.C.	Pavement 'A'	Pavement 'B'	AMOS	Oil	Rubber Asphalt	Rehab.	U.C. 1. Pave 'A' 2. Pave 'B' 3. AMOS
All distances are expressed in kilometres										
16-29-10	Maidstone Picnic Site					0.16				
17-3	Jct. 14 - West Jct. Alberta 14	12.96								
17-6	Lloydminster - Jct. 3								2.12	
19-5-10	Douglas Provincial Park						0.41			
19-6-10	Elbow Harbor						1.00			
21-10	Kindersley - South Jct. 31								26.14	
21-15	Maidstone - East Jct. 3								0.50	
22-5	Lipton - Southey	4.79								
23-1	Bertwell - Somme	5.47						17.09		
23-2	Somme - Chelan							3.00		
26-2	Meota - Turtleford				32.33					
26-2-10	Edam Picnic Site				0.09					
26-4	North Jct. 3 - Jct. 304				0.78					
28-1	Lake Alma - Radville	0.91		0.91						
28-2	Radville - Jct. 13				0.21					
31-4-41	Denzil Access						0.36			
35-4	Weyburn - Francis	15.56								
35-13	Jct. 49 - Jct. 349				8.54					
35-16	Jct. 335 - Nipawin							16.16		
37-2	Climax - Shaunavon	15.20								
38-2-10	Greenwater Provincial Park						4.24			
39-4	Midale - Weyburn							15.84		
39-6	Yellowgrass - Corinne							3.81		
40-4	Battleford - East Jct. 21			0.25						
40-5	East Jct. 21 - Neilburg			35.50						
40-6	Neilburg - Alberta Border			11.11						1. - 3.66
43-1	Jct. 2 - Gravelbourg				37.93					
43-2	Gravelbourg - South Jct. 19	15.06			0.32					
43-3	North Jct. 19 - Jct. 4	22.59				22.59				
44-3-10	Danielson Provincial Park						1.03			
47-2	Estevan - Stoughton	11.09								
48-4	Jct. 47 - Jct. 35	16.26								
49-3	Preeceville - Okla				8.51					
49-4	Okla - Jct. 38				7.48	5.29				
51-1-41	Handel Access						17.44			
52-2-40	Jedburgh Access						10.35			
55-7	White Fox - Smeaton								13.81	2. - 5.10
55-7-42	Garrick Access						0.90			
55-12	Big River - Jct. 124	16.02								
55-16	Peerless - Alberta Border					15.68		19.93		
57-1-10	Duck Mountain Provincial Park	0.80					2.52			
60-1-10	Pike Lake Provincial Park						0.36			
106-01	Smeaton - Jct. 120						17.00			
106-02	Jct. 120 - Jct. 165						40.18			
106-03	Jct. 165 - East of Deschambault	43.40					6.82			
106-04	East of Deschambault - Jct. 135						37.92			- 5.10
120-01-10	Candle Lake Resort Area						2.53			
155-03	Buffalo Narrows - LaLoche	32.30	5.20		1.92		6.00			

Construction Accomplishments in 1981-82

Control Section	Location	Grading		Surfacing						
		Comp.	U.C.	Pavement 'A'	Pavement 'B'	AMOS	Oil	Rubber Asphalt	Rehab.	U.C. 1. Pave 'A' 2. Pave 'B' 3. AMOS
All distances are expressed in kilometres										
165-01-20	Buffalo Narrows - LaLoche	30.41								
202-01-10	Buffalo Pound Provincial Park						1.35			
209-01-10	Moose Mountain Provincial Park	4.00								
211-01-10	Blackstrap Recreation Area						0.39			
219-01-10	Danielson Provincial Park						0.43			
219-04-40	Furdale Access						1.61			
219-04-41	Riverside Estates Access						2.40			
221-01-10	Cypress Hills Provincial Park						0.70			
224-01-10	Meadow Lake Provincial Park	2.00	1.90							
261-01-10	Saskatchewan Landing Prov. Park	1.72					1.14			
261-02-10	Saskatchewan Landing Prov. Park						0.20			
263-01-10	Emma Lake Tourist Facility						3.04			
302-01	Weldon Ferry - Prince Albert			3.98	0.33					
312-01	Wakaw - Rosthern		12.80							
340-01	Radisson - Hafford	2.25								
349-01	Jct. 35 - Naicam	14.79								
355-02	Spruce Home - 11 km West						2.31			
363-03-40	Rosenhof Access						1.63			
365-01	Watrous - Plunkett	3.96			5.96				1.96	
365-01-40	Watrous Access	1.84		0.43	1.41					
376-04	Maymont - Jct. 40	4.57								
377-01	Radville - Ceylon	1.69		0.06						
Totals for	District 1	72.54	3.58		50.74	22.59	21.88	64.50	26.14	
	District 2	75.87		0.97	86.00		14.19	39.43		0.94
	District 3	61.40	7.25		24.63	9.49	17.31	33.39	23.80	
	District 4	32.99	12.80	0.43	7.79		22.65	15.42	1.96	
	District 5	151.47		3.98	27.17		133.74	25.79	14.06	10.20
	Distict 6	85.28	10.22	62.87	39.75	34.34	7.33	19.93	23.30	22.34
Total	Kilometres	479.55	33.85	68.25	236.08	66.42	217.10	198.46	89.26	33.48

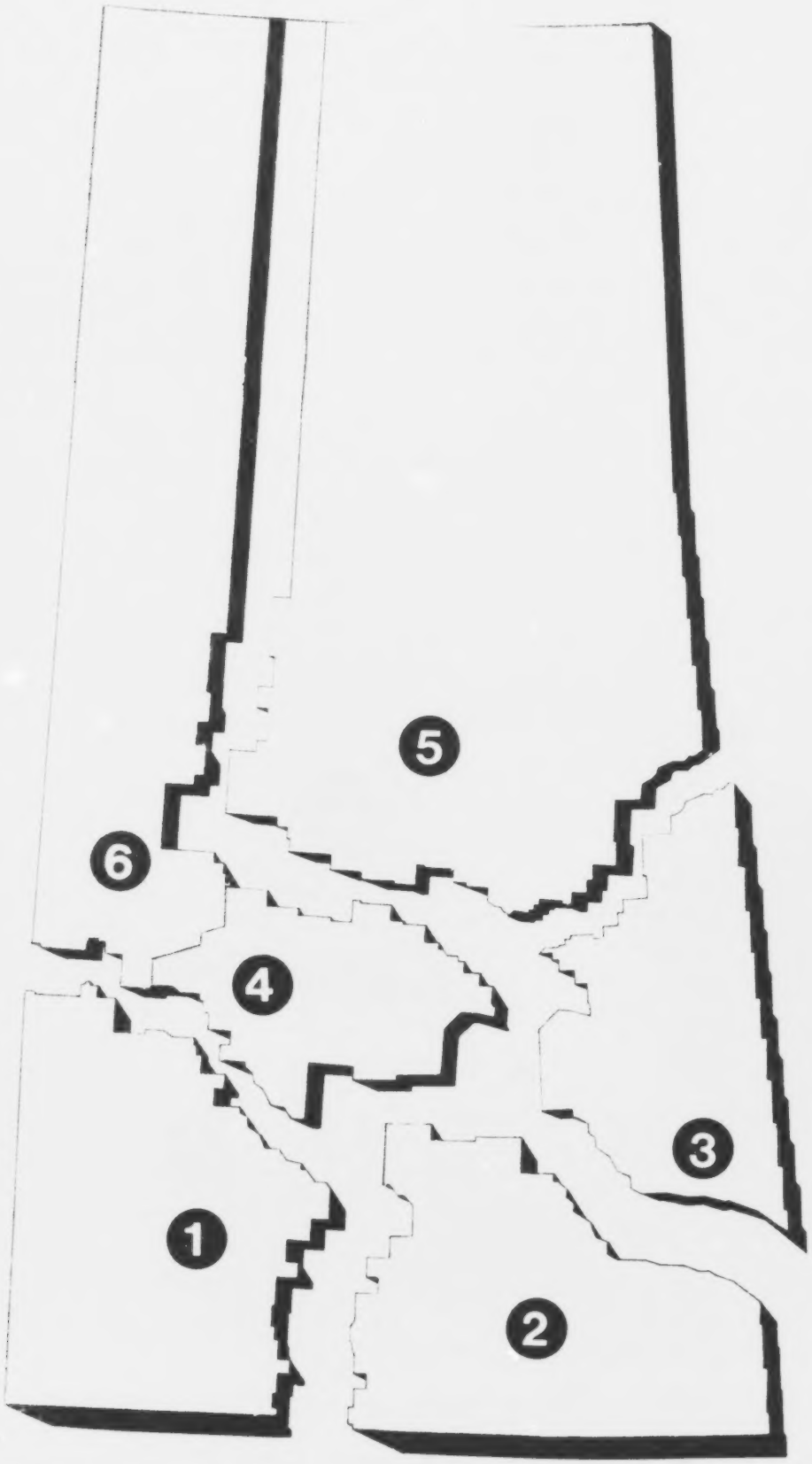




Upgrading Saskatchewan's provincial highway system is a big job. During the year nearly 480 kilometres of grading work was completed along with nearly 875 kilometres of surfacing work. The surfacing work included oil treating access roads to several rural communities under the department's Operation Open Road II program.

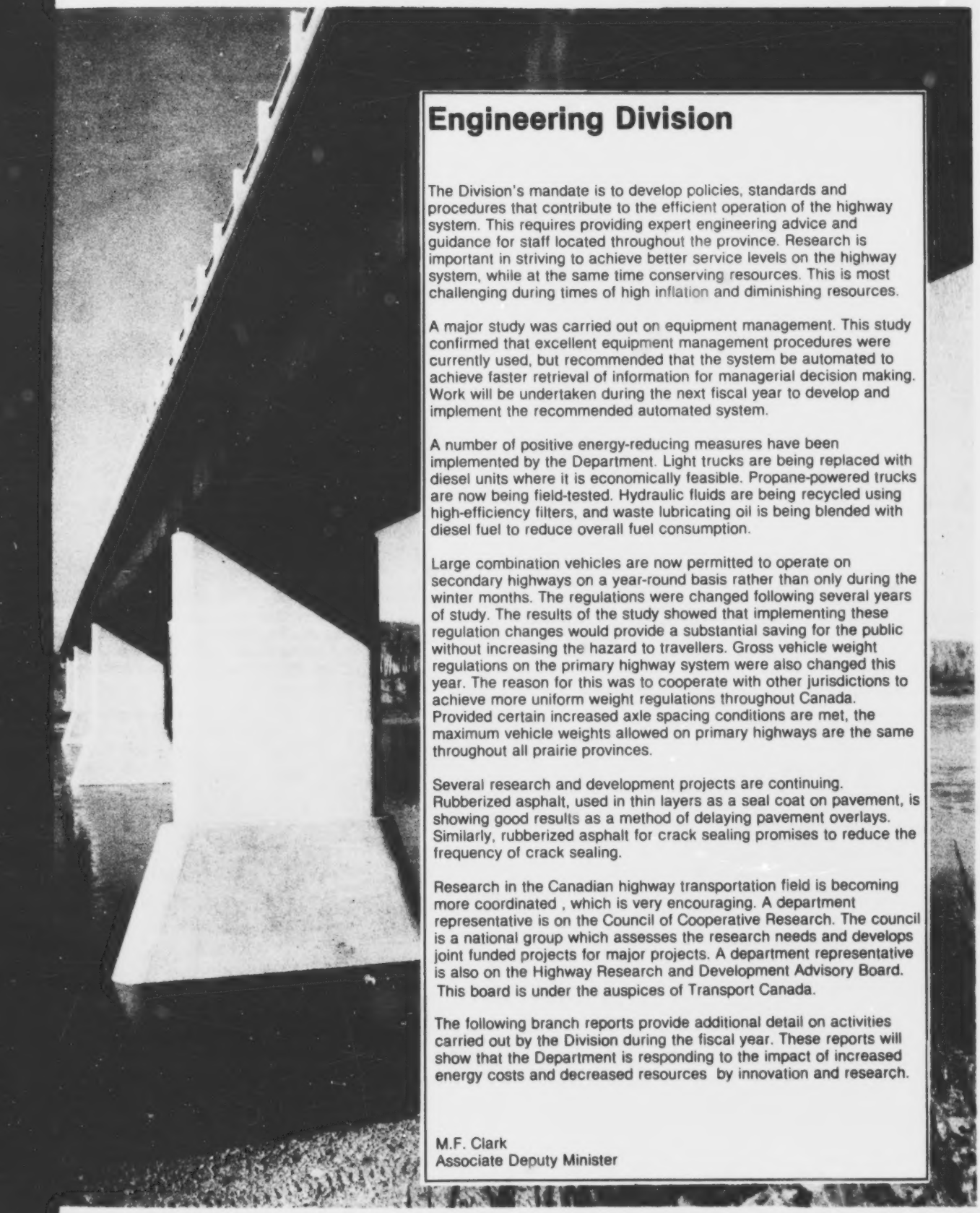
Saskatchewan's Highway Transportation System

Kilometres as of March 31, 1982



Highway System In Kilometres

District	Km
No. 1 Swift Current	
Paved	1 225
Oiled	2 [illegible]
Gravelled	[illegible]
	3 9[illegible]
No. 2 Regina	
Paved	2 5[illegible]
Oiled	2 0[illegible]
Gravelled	[illegible]
	4 7[illegible]
No. 3 Yorkton	
Paved	1 7[illegible]
Oiled	1 0[illegible]
Gravelled	2[illegible]
	3 0[illegible]
No. 4 Saskatoon	
Paved	1 6[illegible]
Oiled	8[illegible]
Gravelled	1[illegible]
	2 4[illegible]
No. 5 Prince Albert	
Paved	1 47[illegible]
Oiled	957
Gravelled	1 605
	4 040
No. 6 North Battleford	
Paved	1 05[illegible]
Oiled	1 02[illegible]
Gravelled	1 0[illegible]
	3 1[illegible]
Totals	
Paved	9 6[illegible]
Oiled	8 6[illegible]
Gravelled	3 0[illegible]
Total	21 3[illegible]



Engineering Division

The Division's mandate is to develop policies, standards and procedures that contribute to the efficient operation of the highway system. This requires providing expert engineering advice and guidance for staff located throughout the province. Research is important in striving to achieve better service levels on the highway system, while at the same time conserving resources. This is most challenging during times of high inflation and diminishing resources.

A major study was carried out on equipment management. This study confirmed that excellent equipment management procedures were currently used, but recommended that the system be automated to achieve faster retrieval of information for managerial decision making. Work will be undertaken during the next fiscal year to develop and implement the recommended automated system.

A number of positive energy-reducing measures have been implemented by the Department. Light trucks are being replaced with diesel units where it is economically feasible. Propane-powered trucks are now being field-tested. Hydraulic fluids are being recycled using high-efficiency filters, and waste lubricating oil is being blended with diesel fuel to reduce overall fuel consumption.

Large combination vehicles are now permitted to operate on secondary highways on a year-round basis rather than only during the winter months. The regulations were changed following several years of study. The results of the study showed that implementing these regulation changes would provide a substantial saving for the public without increasing the hazard to travellers. Gross vehicle weight regulations on the primary highway system were also changed this year. The reason for this was to cooperate with other jurisdictions to achieve more uniform weight regulations throughout Canada. Provided certain increased axle spacing conditions are met, the maximum vehicle weights allowed on primary highways are the same throughout all prairie provinces.

Several research and development projects are continuing. Rubberized asphalt, used in thin layers as a seal coat on pavement, is showing good results as a method of delaying pavement overlays. Similarly, rubberized asphalt for crack sealing promises to reduce the frequency of crack sealing.

Research in the Canadian highway transportation field is becoming more coordinated , which is very encouraging. A department representative is on the Council of Cooperative Research. The council is a national group which assesses the research needs and develops joint funded projects for major projects. A department representative is also on the Highway Research and Development Advisory Board. This board is under the auspices of Transport Canada.

The following branch reports provide additional detail on activities carried out by the Division during the fiscal year. These reports will show that the Department is responding to the impact of increased energy costs and decreased resources by innovation and research.

M.F. Clark
Associate Deputy Minister

Surfacing

Surfacing is responsible for the management of the provincial highway pavements. The management of the system includes design, construction, maintenance practice and rehabilitation programs through development and implementation of:

- policies
- standards
- standard practices
- procedures

The Branch has staff experts who provide department managers with advice and guidance relating to paving and surfacing on the highway system.

The Branch's other responsibilities include:

- Development of an annual pavement rehabilitation program.
- Manage the central filing of gravel pit plans and logs as well as developing policies for the departments management of gravel resources.

Highlights for 1981-82 were as follows:

- Construction of a rubber crack seal test section in conjunction with Research Branch to evaluate four different pavement crack sealers.
- A study comparing the construction and maintenance costs of various thin pavements.
- Completion of the Surfacing Design Manual.
- Presented a technical paper on Recycling Pavement Design at a national conference.

Asphalt Concrete Recycling

The combining of four-lane construction with required rehabilitation of the existing paved highway has advanced the department's entry into the recycling field.

The combination of this kind of work allows the department to use low ratio recycle mixes. The low ratio mixes can be produced with equipment presently owned by the contractors in the province and involves using approximately 50% old pavement combined with 50% new aggregate and asphalt cement.

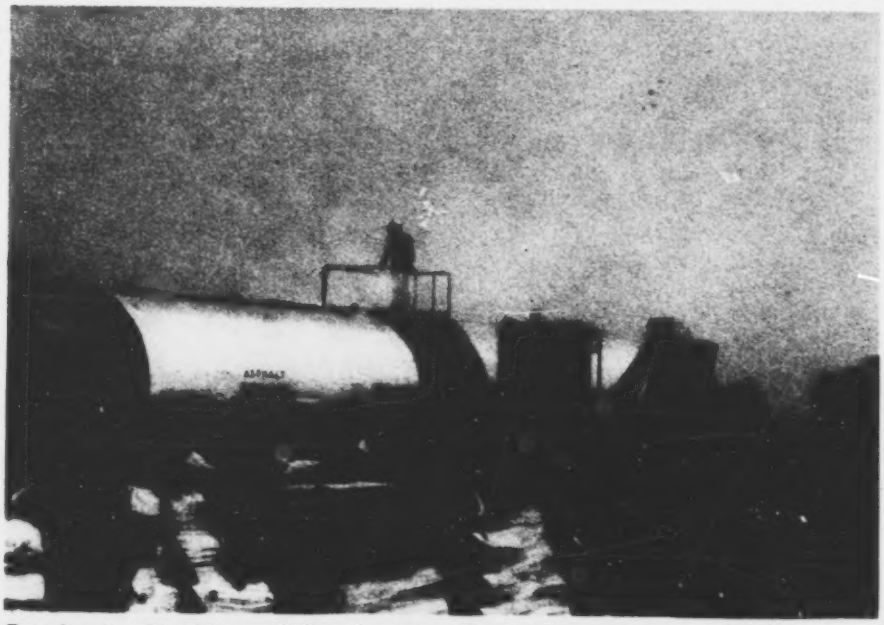
Projects utilizing recycling are on Highways 1, 6, 16 and 22.

Pavement Crack Sealers

Over winter observations of four pavement crack sealers show that there may be a solution to the thermal cracking and the need for annual crack sealing. The final report and implementation plan will be complete in 1982/83.

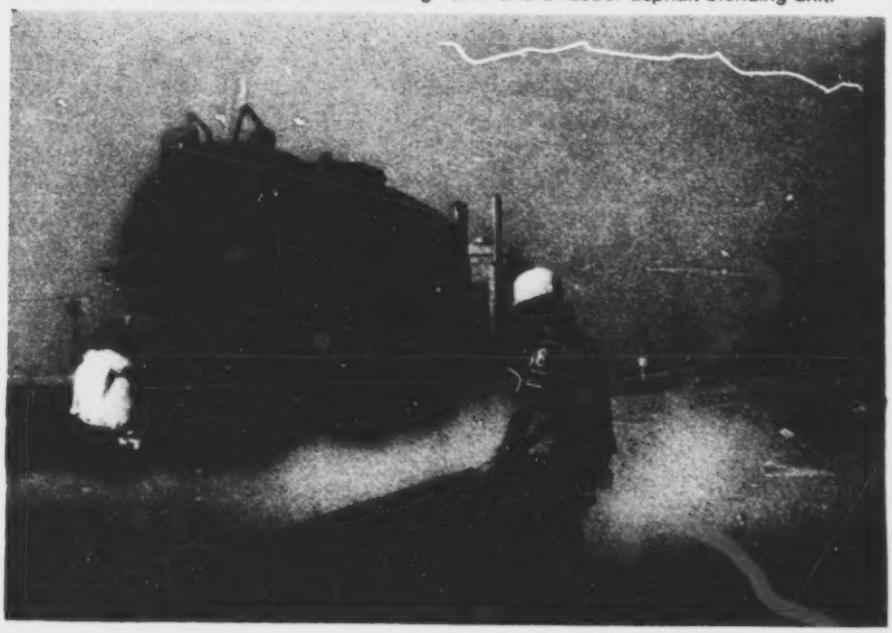
Other Activities

The branch provides technical training for department staff, serves on The Canadian Specification Board and has representatives on technical committees of three national organizations.



Experiments with rubber asphalt seals continued during the year with nearly 200 kilometres of highway surfaced with the process. The rubber is obtained by grinding used tires into a fine crumb. This crumb is then mixed with asphalt and washed and crushed stone to form an excellent wearing and skid resistent driving surface.

The elastic properties of the rubber tend to resist cracking of the surface during the winter. The specialized equipment required for the rubber asphalt seal work includes three Bear Cat distributors, a heated storage tank and a rubber asphalt blending unit.



Equipment

Equipment Branch is responsible for managing the Department's fleet of equipment. Staff in the branch are constantly reviewing and updating policies, procedures and standards related to equipment operation and maintenance.

The majority of the department's equipment is used to maintain the highway system. Other uses are for grading and oiling roads, constructing and repairing bridges, materials testing and research. In total the department has 3,842 units in the fleet. The major units are trucks, tractors, snowplows and graders.

In 1981-82, 8.4 million dollars was expended on new equipment. Acquisition of this equipment brought the capital cost of Saskatchewan Highways and Transportation equipment fleet to 70.7 million dollars. 256 requisitions were raised to purchase major equipment, support equipment and shop equipment and tools.

The cost of operating the department's equipment for the year was $20.2 million. Repairs cost $8.2 million, fuel $5.6 million and $6.4 million was spent on depreciation, licence and administration.

Eight shops are located throughout the province to service and repair the equipment.

Equipment Branch are continually looking for energy-saving products and concepts. The high cost of petroleum products has brought forth many energy-saving devices, several of which were researched by this branch in cooperation with other branches.

Diesel engines in medium duty trucks have become popular during the last few years. Our experience indicates the trend will continue. Diesel engines are being specified in all units where an economic justification can be made.

Twelve department-owned vehicles were selected to participate in a propane fuel test program. Four units were modified to burn either gasoline or propane. Seven units were converted to burn propane only, and one new factory-modified unit was purchased. Test data will be compiled for a period of 24 months. A decision will then be made as to additional conversions or purchases.

Responsibility for the Moose Jaw Repair and Maintenance Shop was transferred at year end from Equipment Branch to Regina District. The department also has shops in Regina, Swift Current, Rosetown, North Battleford, Saskatoon, Prince Albert and Yorkton. The shops provide repair and maintenance services for the department's equipment fleet. A new shop was also completed and officially opened at Yorkton in February, 1982, replacing an older facility that had been used by the department for many years.

Rental rates for department-owned equipment were calculated on a provincial basis in addition to the individual management unit rates.

This branch set rates for the rental of private equipment and these were distributed to 175 contractors, equipment dealers, trucking firms, towns, cities and other government departments and agencies.

To comply with the new noise level legislation, a program was implemented to measure and identify noise levels on all department-owned equipment. To monitor noise levels, nine noise level meters were purchased for use in the various districts. Personnel were trained in the use of these meters.

Equipment Branch administers the mobile communications system for the department as well as for the Highway Traffic Board. During 1981-82, Regina, Prince Albert and North Battleford Districts were converted from the single-frequency mobile radio system to a four frequency radio/telephone network. The three remaining districts will be integrated into the dial access network during 1982-83.

When completed our mobile radio/telephone communication network of over 850 mobiles and 68 repeaters will be one of the most comprehensive in the province. This new system when completed will increase the capabilities for our department as well as for the Highway Traffic Board. The Highway Traffic Board will be able to interchange with the R.C.M.P. radio frequency.

Maintenance

Program and Standards

The highway system maintained by the department in 1981-82 was 21 351 km. This total includes 8 501 km of pavement, 1 009 km of asphalt mat on subgrade, 8 851 km of oil treatment and 2 990 km of gravel.

For the second time in the Department's history the number of paved roads is greater than the number of oil-treated roads. This means that 51 per cent of the surfaced highways are now free of spring bans.

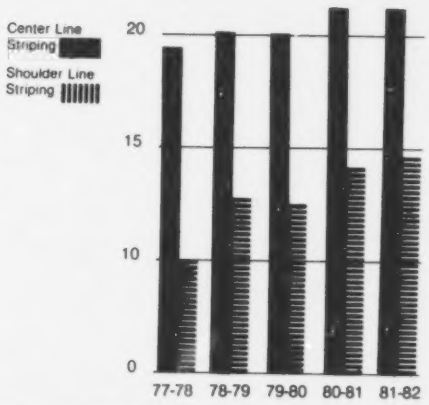
During 1981-82 the maintenance budget increased by 17.4%, but this was in time of rapid inflation for major components in the maintenance budget such as asphalt which increased by 37% and equipment rentals which increased by 19%.

During the year the Maintenance Practice and Procedures Manual was issued with twenty-one procedures included. Fifteen policies were completed for inclusion in the Maintenance Policy and Standards Manual.

Pavement Marking

During 1981-82 the department striped 21 000 km of centerline and 14 511 km of shoulderline. Again the department was able to set a new record for the amount of striping achieved in one month. The record production of 6 697 km occurred in October, 1981. Design was also begun on the Department's second-largest high-speed striper.

Pavement Markings
Kilometres in Thousands



Weights and Dimensions

Major changes in the allowable vehicle weights were developed during 1981-82. The maximum allowable gross weight on the primary highways increased from 50 000 kg to 53 500 kg. The allowable gross weight on secondary provincial highways increased from 33 600 kg to 49 000 kg with the use of combination units. The weight increases required some changes in axle spacings, but no changes were made to vehicle dimensions or axle weights. This change is expected to greatly improve the efficiency of truck transportation in Saskatchewan, including a 12-million litre annual reduction in fuel consumption.

During the year a total of 26,699 permits were issued for overweight and overdimension loads. This represents a slight decrease over past years but reflects the increased use of multi-trip permits to reduce the administrative workload for the Department and the Transportation Agency.

Work began to develop a policy for the transportation of round bales. The purpose of the policy is to protect the travelling public, but without unduly restricting the movement of hay. The department has been working with the industry to resolve the load security problems that developed because of the increased hauling of bales following the second consecutive dry year.

Research

Materials Section

Branch staff continued several long-term research projects during 1981-82, including studies on the performance of staged and 'thin' pavements; pavements with sulphur or rubber; ash from coal-fired power stations; and on the performance of overlays on badly-cracked pavements.

Data collection continued from a series of sites instrumented to monitor seasonal changes in subgrade density and water content. The data will be used in conjunction with an extensive performance evaluation of pavement 'B' structures and to determine the relevance and effectiveness of compaction specifications.

A new test section to evaluate various rubberized compounds as long-lasting crack sealants was laid near Rosetown.

The pavement test track was used for continuing development for test sensors, for testing the structural adequacy of new large-diameter polyethylene (plastic) culvert pipe, and for programming a major pavement test for 1982.

Transportation Section

The transportation section continued its research into design concepts for roadway illumination and for safety barriers. Projects on improving the visibility of snow plows to motorists and on more durable traffic markings were continued.

A major study of the cost effectiveness of equipment usage by department units was started.

University expertise was commissioned to examine the effect of inlet geometry on culvert hydraulics. The results may allow use of smaller diameter pipe at many locations.

Other Activities

The Branch maintained active membership in national and international technical societies. The director continued to serve on the Transport Canada Highway Research and Development Advisory Board.

Branch staff issued four technical reports, attended two out-of-province conferences and served on steering committees of five multi-province research projects.

Road Design Branch

Road Design Branch staff are responsible for eight major areas:

- Developing and updating design standards.
- Reviewing geometric and drainage designs.
- Interchange designs and general location reports.
- Reviewing highway lighting design.
- Prepare and update manuals pertaining to design activities.
- Providing advice and guidance on matters pertaining to geometric, culvert and highway lighting designs.
- Develop standards and policy, and direct roadside development permit operations.
- Operate the department's air photo library.

In addition to the above activities, metric conversion remained a significant activity this year.

Metrication

Metrication of the major standards was previously completed. Conversion of minor standards is 50% completed.

Manuals

Work commenced on the updating and metric conversion of the Design Manual.

Development Permits

Staff continued the review and update of the permit policy. Approximately 390 permits were issued and 320 subdivisions requested were reviewed.

Safety

Safety remains a most important aspect of geometric design. Safety consideration must be balanced against costs to ensure that safe economical highways are achieved.

Air Photo Library

Library staff acquired 2 019 line kilometres of photography and 770 mosaic sheets. Tendering and contract supervision was handled by Central Survey and Mapping Agency.

Geotechnical

The major responsibilities of the branch are development of geotechnical standards for subgrade construction, site investigations for major valley crossings and the provision of technical advice to other units in the department.

Standards and Policies

Work continued on a study of expansive soils. Special emphasis was placed on the lime modification of soils which changes the swelling properties of soil. Laboratory test results were very favourable but actual field use has not been fully successful indicating the need for further study and analysis. The use of select soil subgrades to replace in-situ soils is being analysed to help determine their engineering behaviour and economic benefits.

Site Investigations

Site investigations require test drilling, sampling of soils, testing of soil properties and engineering designs. Alternate routes are compared and recommendations are made concerning slope and embankment stability, bridge foundation and groundwater control.

Work continued on the site investigation for the North Saskatchewan River crossing on Highway 17 north of Lloydminster. Preconstruction instrumentation was installed in order to monitor the stability of the embankment fills to be placed in the following season.

A joint site investigation/ research program is being carried out with the University of Saskatchewan. This work is providing information on the past construction performance of several bridges that have been constructed along the North Saskatchewan River. It is also providing the geological/ geotechnical framework to assist in the design of future bridges such as at Borden.

Staff Training

The branch continued its active role in providing technical training to staff in other branches and divisions within the department. An airphoto interpretation class was set up in cooperation with the Materials Engineer from Saskatoon District. The branch also assisted in the training of a new Materials Engineer for the Yorkton District.

Environmental Liaison

During the year Geotechnical Branch continued its new role of acting as the departments official liaison with the Department of Environment. This involves a compilation of the departments capital program for submission to the Department of Environment for environmental classification. The branch also provides a review of any environmental legislation or guidelines that may affect the department's programs or procedures. This included development of the guidelines for road development in rural areas and in northern Saskatchewan. Work was also initiated on guidelines relating to sand and gravel pits.

Determining foundation conditions for bridge piers is vitally important. Here a rotary drill mounted on a barge is used to drill test holes, some as deep as 35 metres below the river bottom. This work was carried out on the North Saskatchewan River where the department is working on a new major bridge north of Lloydminster.

Materials Testing

More than 11,000 tests were conducted in the Central Laboratory to evaluate materials for highway design, construction, performance and research. The lab conducted a study into methods of predicting stripping in asphalt pavements and evaluation of additives for improving durability. Testing services were also provided to the Department of Rural Affairs for bridge foundation analysis. In addition, six coring machines and 94 field testing laboratories provided on-the-job testing. Three of these units were provided to the Department of Municipal Affairs and two were used as enclosures for automatic weigh scale electronic equipment and for other traffic research studies. Forty-three portable nuclear density meters, one borehole meter and four asphalt meters were serviced and calibrated for construction project use. Compaction studies at a number of highway locations was continued and a study of bearing strengths was continued using a dynamic vibratory system.

A total of 47 000 km of paved and oil treated surfaces were tested with car road meters to assess riding quality. The tests aid in maintaining appropriate levels of riding comfort on various highway systems.

Benkelman beam deflection tests were conducted on 1 500 km of pavements at 12,500 individual locations. The tests aid in determining load carrying capacity of pavements and in designing pavement structures. Skid tests were performed on major bridge decks and overpasses and several sections of provincial highways to detect potential slippery areas.

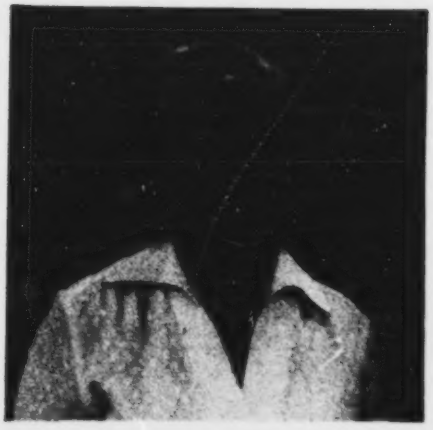
A rotary drill bored a total of 2 500 m of test holes to investigate foundation and slope stability conditions for bridge and valley crossing construction including earth slide problems on the Qu-Appelle Valley at Rocanville and the Souris Valley at Alameda; the grade foundation near Meskanau and bridge foundations for the Department of Rural Affairs on the Leather and Whitesand Rivers. Additional barge-mounted drilling was provided on the North Saskatchewan River at the Meridian Site and extensive instrumentation was installed on the approach slopes. A study of slide problems on the North Saskatchewan River was continued in the Petrofka to Maymont area. Deep sampling was provided for salt contamination studies at two maintenance compounds and foundation studies were conducted at five sites for proposed highways maintenance buildings.

Branch staff provided supervisory assistance for several construction projects. Special assistance was provided to head office staff in the development of asphalt mix design for use in recycled pavements.

Additional emphasis was placed on materials schools for training of maintenance staff.

Geological technician Lyle Sinclair makes observations and collects drill cuttings to aid the geologist in establishing the stratigraphy in the Borden area. These tests are part of a research program on the North Saskatchewan River to provide a better understanding of the mechanisms of the extensive earth slides and provide guidance in avoiding the problems at bridge crossing sites.

'40 years and still enjoying her work' — Ruth Nelson



Saskatchewan Highways and Transportation is far bigger and more complex than it was in 1940, but the people still make it a nice place to work, says department veteran Ruth Nelson.

"It's the people, mostly," Ruth said. "Some of these people I've worked with for 25 years."

She started work at the old district warehouse at Smith St. and 7th Ave. in the summer of 1940, when she was 18 years old. "Jobs were in short supply and I took this one," she said.

Ruth didn't know it was the beginning of a long career with Highways. She stayed at the warehouse for 25 years, doing "everything from giving road reports to typing to taking stock."

The warehouse moved to Dewdney and Atkinson in the 1950s. She said she enjoyed her fellow employees.

"In the warehouse I worked with mechanics and truck-drivers, not office-types. They were great! I was a little spoiled because I was the only girl."

Ruth transferred to the Equipment Branch in 1966. Now she splits her time between Equipment and Engineering. She takes care of mail, attendance and odd jobs.

Although most government departments and branches used to be located in the legislative building Ruth has never worked there.

When she started in 1940 the department was quite small. "They even had a few little horse patrols to grade the roads because most of the roads were gravel then," Ruth said.

The department has acquired more employees, as well as more equipment, since the Second World War.

"It was small then, and I used to know everybody," Ruth said. "It's sad to have worked here so long and know so few people now."

But that doesn't mean Ruth is ready to retire. She still treasures her Highways friendships. "When I put in my 35 years, I was all gung-ho to quit, but I'm still here."

Support Services Division

The mission of the Support Services Division is to provide services essential to the overall efficient management and operation of the Department.

The primary services are in the areas of staffing, personnel management and training, financial management and control, management and administrative systems, computer services, property acquisition, legal surveys and mapping.

Organizationally, the Division is structured on a functional basis with each of four Branches (Personnel, Management Services, Financial Services, Surveys and CSMA) providing the Department, and in some cases other government departments and agencies, with a specialized service.

Continued emphasis was placed on Management Development again this year. This is the third year of a long-range management development plan implemented by the Department to meet the continued need for a highly qualified, capable staff.

The Department is in a staffing cycle in which a number of appointments have already been made to middle and senior management positions because of retirements and the resulting chain of promotions that they generate.

For example, 11 of the 26 senior managers (Management Series) have been appointed to their present positions during the last three years. These include the three most senior officials of the Department: the Deputy Minister, Associate Deputy Minister (Chief Engineer) and the Director of Operations Division. All except one of these eleven appointments, the Director of Central Survey and Mapping, were promotions from within the Department, due in large part to the Management Development program.

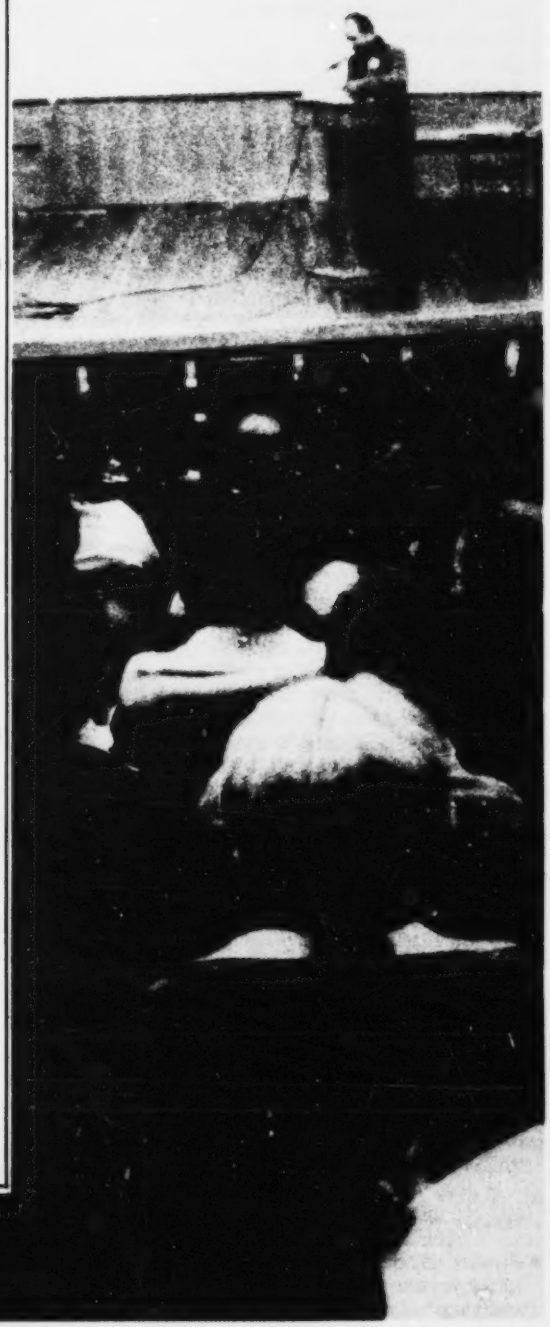
A new strategy development process was introduced and adopted throughout the Department. Mission statements were developed for each management unit to conform with the overall mission of the Department.

The Highways Advance Account management study was completed this year. Implementation of recommendations is underway. A new budgeting concept and format was developed and implemented for the preparation of the 1982-83 advance account budget.

Computer equipment installations in two of the six district offices were upgraded to allow direct data input and retrievals for all information systems involving district operations.

Division staff were involved in many other significant services in the Department. Details of specific programs and accomplishments are provided in the following individual Branch reports.

J.A. Schwartz
Director of Support Services Division



Personnel

The Branch continues to meet the challenge of providing centralized personnel services by:

- providing advice and assistance in areas of personnel management, employee benefits, industrial safety, industrial relations, staffing, staff training and development.
- identifying training needs, developing and delivering programs to meet the needs.
- conducting manpower planning activities to determine appropriate future staff requirements.

Training and Development

Staff training provided a wide variety of courses and development opportunities to employees which included management, supervisory, technical, trade, equipment operation and assistance to attend formal education institutions and related activities.

The equipment training unit conducted or coordinated 60 classes during the year. The driver improvement, classification and endorsement training had a combined attendance of 1100. Driver spot checks were also initiated to monitor program effectiveness and compliance with driver regulations.

The need for senior management and management development programs was identified for special emphasis. A total of 362 employees attended 23 courses which included conducting effective meetings, performance evaluation, time management, problem solving, effective writing, Telos (decision making), project management, negotiation tactics, and managing stress.

A survey and drafting course supported by several departments was held in Prince Albert. Eight Department engineering technicians attended this course.

Technical courses in air photo interpretation and contracts and specifications were provided to a total of 40 engineers and technicians.

A total of 154 employees attended managerial or technical seminars and classes. 175 employees attended training courses organized by the Public Service Commission.

The Administrative Development Diploma program was attended by three Department employees. We continue to support the University of Regina's Co-op Engineering program by providing six students with short term employment and on-the-job training.

Safety

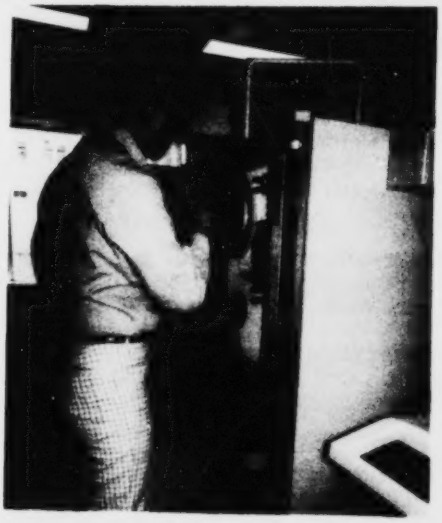
The Department is committed to the concept of promoting safety in the work place and as a way of life.

To meet this commitment, training was provided throughout the Department as follows. 207 employees took first aid training, 69 attended defensive driving courses, 189 participated in a professional driver improvement course, 29 learned about the safe handling of explosives, eight took a short course on winter survival and 19 attended fire-fighting and traffic control classes.

Management Services

Management Services Branch is responsible to provide, assist in and promote the analysis, development, implementation, operation and maintenance of effective and efficient Management Information Systems for the Department and other local government agencies, as requested by the department. Some of the major activities are:

- Provide central data processing and keypunching services.
- Provide assistance and training to the Districts in the use of their terminals.
- Conduct system studies and design systems to provide better and more timely information for management.
- Develop data processing system by writing and testing computer programs to collect and store data, retrieve data and provide reports for management.
- Coordinate and conduct organizational reviews of department units.
- Provide liaison with other departments and agencies of government in the carrying out of assigned duties.



Some of the major accomplishments are:

- Review of the policies and procedures of the Highways Advance Account Management was completed. The final report was submitted and the recommendations were approved in principle by the department.
- Branch personnel assisted in the training of a new technique in strategy development. Department personnel were trained and assisted in the documentation of existing strategies and the development of new strategies. Each operating unit of the department now has its strategy documented.
- A study of the organization of Management Services Branch was conducted. The department approved implementation of the study.
- The Traffic Accident Information System, which provides analyzed traffic information from traffic counters, speed studies, vehicle weights and origin/destination studies, was completed. This system will assist in determining the future needs of our highway system.
- An automated system was developed and implemented to maintain Advance Account Accounting Information.
- A system to maintain an up-to-date inventory of the physical characteristics of the Saskatchewan provincial highway system was implemented. We now have a computer file of this information to better assist in future planning.
- A system was developed to produce Slope Stake and Second Grade notes to be used for the construction staking on a highway. These notes are now available from a computer file when the design is done.
- The preliminary design of a new Capital Budget Control system was completed and approved. This system is to provide an up-to-date status of capital expenditures.

Surveys Branch & Central Survey & Mapping Agency

Surveys Branch

The Surveys Branch carries out legal survey, land negotiation, document processing and property management activities, enabling the Department to acquire and administer lands for the construction of highways and public improvements.

Legal Surveys

Four legal survey crews were in the field from April to early December. The department's legal survey requirements for 1981-82 highway construction projects were met and some legal survey projects from the Grid and Main Farm Access Program were also completed to supplement the major portion of that program which is let to private industry

The crews completed the survey of 340 km of provincial highways, 257 km of grid and main farm access roads, 12 public improvements and 12 miscellaneous surveys.

Property Acquisition

The land acquisition requirements for the 1981 construction season were met. Our objective of 1,100 agreements was surpassed with staff members working outside their usual boundaries to a greater degree than normal in order to obtain the properties required.

Plan Processing

The examination and registration of plans of survey, in respect to the Provincial Highway Program, was completed on time to meet construction schedules and satisfactorily maintained in respect to the Grid and Main Farm Access Road Program.

The overhaul of our storage facility to improve retrieval and expansion was also completed.

Property Management

The volume of requests for consents, permits and other administrative considerations with respect to departmental properties continued at an extremely high level. However, Property Management staff were able to provide satisfactory service.

The grid road legal survey program was continued at a reduced level in 1981-82. 620 km were completed by private industry and 257 km were added by department staff. However, due to a lack of sufficient funds and a high level of construction, a substantial backlog of unsurveyed projects still exists.

1981-82 Accomplishments

Provincial Highway Surveys	340 km
Public Improvements and Miscellaneous Surveys	29 plans
Grid Roads and Reference Surveys — Industry	620 km
— In-house	257 km
Plans of Surveys Recorded: Including Highways, Subdivisions, Pipelines and Miscellaneous	1,061
Highway Plans of Survey examined and processed	431
Highway Plans of Survey registered	345
Property Agreements secured	1,138

Central Survey & Mapping Agency

The purpose of the Central Survey and Mapping Agency is to provide and coordinate investment in the basic survey, mapping and land data base infrastructure of the province; to provide a centralized survey and mapping service to provincial departments; and to fulfill statutory responsibilities of the Controller of Surveys under the Land Surveys Act, including administration of the Provincial Township System.

Surveys

The Inertial Survey System (ISS) Program to establish a province-wide second order geodetic control survey framework as a base for all other surveys, mapping and land information was continued and cost-shared in cooperation with Geodetic Survey of Canada. 280 stations were ISS measured. 208 were emplaced and referenced by private consultants between Townships 1 to 20, Range 15, W2M to the Manitoba boundary, for ISS measurement in 1982-83.

The Urban Control Survey Program continued. Most of the field work for the Battlefords area control survey was completed. Private industry was contracted to complete a vertical and horizontal control framework at Yorkton in connection with the Flood Hazard Mapping Program.

Under the Northern Control Program, legal surveys along Highway No. 155 were completed through La Loche and Buffalo Narrows. Also 210 km of 1st order levels were completed between Buffalo Narrows and Clearwater River along Highway No. 155 towards Cluff Lake.

Under Controller of Surveys activities, daily administration of the provincial legal survey system continued, and survey instructions were issued and examinations made of 10 major mineral lease plans and four new Indian Land Claim plans in Northern Crown lands. Two meetings of the Geographic Names Board were held.

Subdivision advice and northern land descriptions were provided to the Department of Northern Saskatchewan and lightning monitoring installations were oriented.

Provincial lands were surveyed for the Department of Tourism and Renewable Resources in connection with Wild Life & Recreational Subdivision Programs.

Mapping

Aerial photography contracts were coordinated and administered by CSMA on an inter-departmental basis, and also coordinated with federal flying programs to achieve economic benefit and universal increased coverage in Saskatchewan. 8 000 line km of 1:60,000 photography were completed by CSMA in conjunction with the Township Photo Map Program.

Production of the 1:20,000 Scale Township Photo Maps was continued. 1,000 sheets were printed in 1981-82 bringing the total to 3,000 sheets covering 80% of the subdivided area of the province. These maps are being used by departments such as Urban Affairs, Rural Affairs, Agriculture and Mineral Resources as well as rural municipalities and the public.

64 Electoral Constituency Maps and descriptions were prepared for the Electoral Office and the fourth edition of the Saskatchewan Air Facilities Map was produced.

Public and governmental use of the Map and Photo Library and Sales Facility continued at a very high level.

The agency was frequently called upon for technical assistance in design of survey and mapping projects and contract preparation for government departments and municipal agencies.

Data

Activities continued in the organization and digitization of provincial control and legal survey data, and in the preparation of this data for use as a primary cadastral layer in a provincial geographic data base.

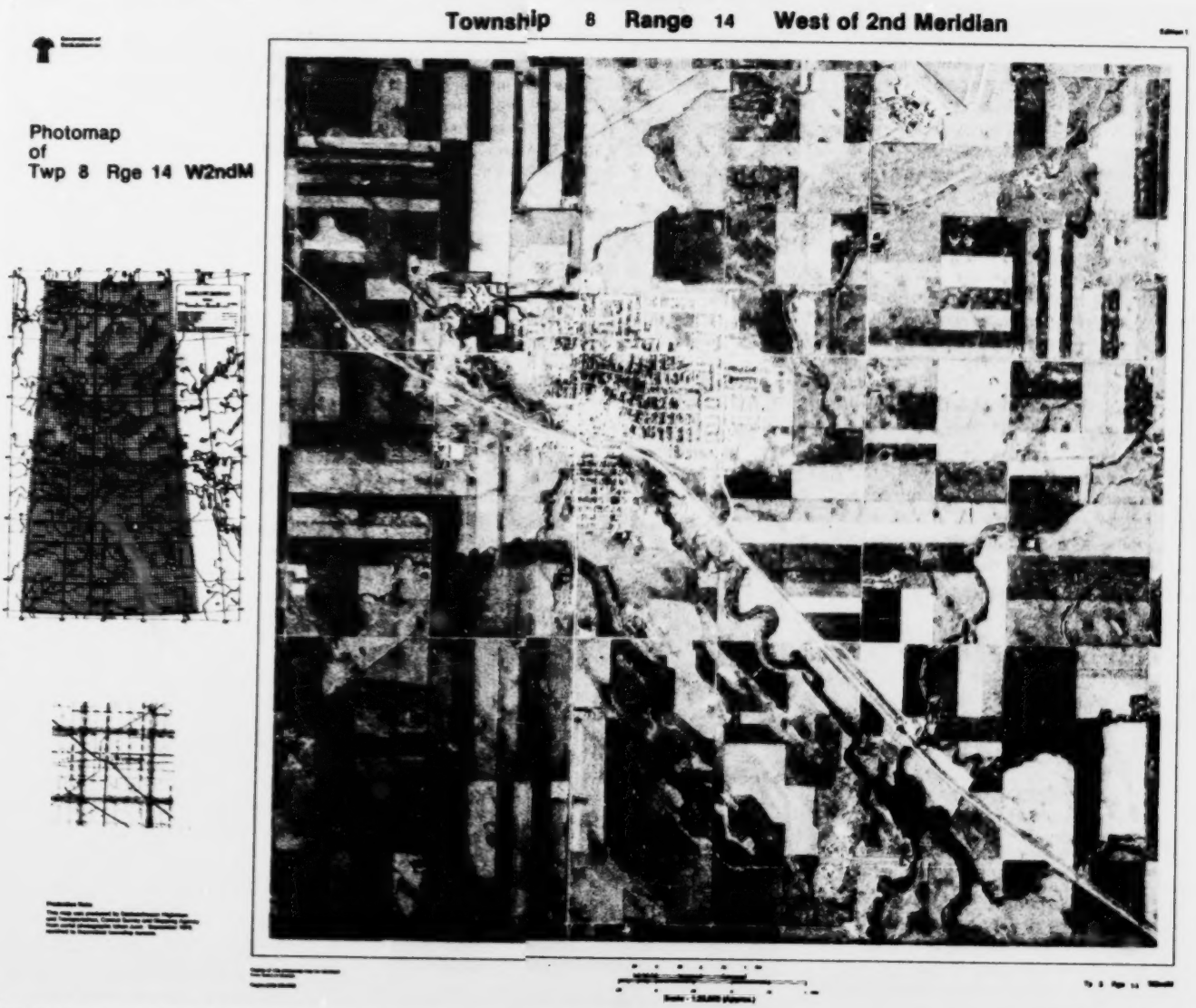
Data from current survey and mapping projects is being processed and a format

has been developed for a digital file of co-ordinates for the Provincial Township System.

Centralization of Activities

The survey and mapping element of the Department of Tourism and Renewable Resources was transferred to CSMA on 1981, April 1. During the year, the staff and the Map and Photo Library and Sales Facility were moved to CSMA's location at 1855 Victoria Avenue, Regina. The integration of facilities and resources has proved beneficial in the overall planning and execution of provincial survey and mapping programs.

Studies were conducted on an inter-departmental basis for further rationalization and strengthening of provincial survey, mapping and data base programs and to promote development of provincial strategies for a modern multi-user 'Land Related Information Management System.'



Central Survey and Mapping Agency has designed and produced this product as part of its basic provincial mapping series. The first edition of the 1:20,000 photomaps, adopted as the common geographical location identifier by most government departments and agencies, are now available for over 3,000 townships in the subdivided part of the province. Each map sheet covers one township and presents a photographic image of the terrain in an organized format which is easily understood.

With the increasing advance of the second order survey control program in the province, the map sheets are to be revised and contour lines, UTM grid, geographic names and other features will be added. Matching cadastre overlays showing all land tenure are also being produced for each map sheet. The first 16 prototype revised map sheets are expected to be available later this fall 1982. These maps and survey control network form part of the provincial geographic data base and are an invaluable aid for the developing and managing of provincial resources.

The photomaps are distributed by the Central Survey and Mapping Agency through its Map and Photo Library, 1855 Victoria Avenue in Regina, and by DTRR regional offices throughout the province. Map sheets are sold at a nominal price of $3.00 each.

Financial Services

Financial Services Branch is responsible for the financial affairs of the Highways Appropriation and Highways Advance Account.

The branch processes payments and receipts, maintains records and produces financial and statistical reports. The branch also schedules and co-ordinates preparation of the department's annual administrative budget.

Payment of Accounts

In 1981-82 the accounting section for appropriations processed 34,126 invoices while the advance account processed 66,663 invoices. These payments are processed well within the guidelines set by the Department of Finance.

Receipts

Cash receipts through Appropriations Section amounted to $10,859,747 of which $7,398,657 came from the Government of Canada. Government of Canada cost-sharing projects included:

Forestry Agreement	$1,146,688
U.T.A.P.	1,095,155
Northlands Agreement	5,156,814

Labour Service Payroll

The payroll section produced 38,631 cheques for hourly paid employees along with personal statistical records. Payments for wages, travel, and sustenance expenses amounted to $28,704,703.

Since the payroll information is now being submitted from the district offices by remote terminal it takes approximately eight working days to process 90-95 per cent of the Labour Service payroll.

Highways Advance

The Highways Advance Account Management Review Committee, established in 1980-81 to examine in detail organizational and financial systems, concluded its study in the fall of 1981.

Major recommendations from the study included changes in financial and budgetary management information systems, a revised equipment management information system and a new materials (inventory) management system.

The implementation of a new budget process was well advanced by March 31, 1982.

The automation of the Advance Account accounting system continued during 1981-82, with vouchers, invoices, work orders and stores sales processes being converted. The automated system results in quicker turn around time for payment of supplier's invoices, recovery of custom work costs, and recording of financial transactions.

Public funds invested in highway transportation services have now exceeded $2 billion since Saskatchewan joined confederation in 1905. The first billion dollars was invested between 1905 and 1975, a span of 70 years while the second billion dollars was invested during the past seven years.

Accumulated Expenditure 1905 to Date

Fiscal Year	Current Year	To Date
1905-06	49,546	49,546
1906-07	484,177	533,723
1907-08	1,041,383	1,575,106
1908-09	1,443,335	3,018,441
1909-10	591,957	3,610,398
1910-11	610,920	4,221,318
1911-12	614,356	4,835,674
1912-13	2,525,188	7,360,862
1913-14	1,970,135	9,330,997
1914-15	2,370,439	11,701,436
1915-16	831,594	12,533,030
1916-17	536,594	13,069,624
1917-18	815,438	13,885,062
1918-19	616,472	14,501,534
1919-20	1,306,370	15,807,904
1920-21	1,804,973	17,612,877
1921-22	2,495,925	20,108,802
1922-23	2,201,358	22,310,160
1923-24	2,037,295	24,347,455
1924-25	2,229,408	26,576,863
1925-26	2,123,173	28,700,036
1926-27	2,660,195	31,360,231
1927-28	2,488,961	33,849,192
1928-29	4,228,261	38,077,453
1929-30	6,664,400	44,741,853
1930-31	10,703,359	55,445,212
1931-32	8,149,746	63,594,958
1932-33	905,374	64,500,332
1933-34	862,029	65,362,361
1934-35	1,661,983	67,024,344
1935-36	1,620,142	68,644,486
1936-37	2,595,381	71,239,867
1937-38	2,823,356	74,063,223
1938-39	3,509,280	77,572,503
1939-40	3,399,603	80,972,106
1940-41	1,706,382	82,678,488
1941-42	1,874,917	84,553,405
1942-43	2,126,374	86,679,779
1943-44	2,918,157	89,597,936
1944-45	3,387,320	92,985,256
1945-46	3,908,367	96,893,623
1946-47	6,312,801	103,206,424
1947-48	8,840,535	112,046,959
1948-49	8,853,999	120,900,958
1949-50	8,767,610	129,668,568
1950-51	10,118,744	139,787,312
1951-52	12,823,535	152,610,847
1952-53	18,919,646	171,530,493
1953-54	19,135,070	190,665,563
1954-55	20,395,779	211,061,342
1955-56	20,127,262	231,188,604
1956-57	24,140,190	255,328,794
1957-58	24,491,369	279,820,163
1958-59	23,697,574	303,517,737
1959-60	23,104,119	326,621,856
1960-61	25,237,066	351,858,922
1961-62	21,591,307	373,450,229
1962-63	22,094,828	395,545,057
1963-64	24,167,674	419,712,731
1964-65	27,152,511	446,865,242
1965-66	40,679,979	487,545,221
1966-67	54,387,704	541,932,925
1967-68	60,227,543	602,160,468
1968-69	60,110,923	662,271,391
1969-70	58,560,829	720,832,220
1970-71	68,081,718	788,913,938
1971-72	66,933,052	855,846,990
1972-73	63,362,093	919,209,083
1973-74	69,456,878	988,665,961
1974-75	96,760,356	1,085,426,317
1975-76	110,162,524	1,195,588,841
1976-77	123,321,325	1,318,910,166
1977-78	132,425,146	1,451,335,312
1978-79	160,610,850	1,611,946,162
1979-80	158,107,523	1,770,053,685
1980-81	168,287,313	1,938,340,998
1981-82	191,474,090	2,129,815,088

Appropriation and Expenditure 1981-82

	Appropriation	Expenditure
Ordinary		
Executive Administration	$ 505,480	$ 548,433
Financial Services Branch	546,880	518,542
Personnel Branch	725,570	678,461
Planning Branch	664,000	676,982
Surveys Branch	1,617,280	1,702,554
Works Branch	97,060	99,835
Public Communications Branch	335,350	334,978
Operations Branch	775,760	779,719
Engineering Division	1,869,270	1,775,977
Traffic Safety Engineering Branch	238,130	241,014
Bridge Branch	395,560	402,937
Swift Current District	918,500	968,487
Regina District	1,362,840	1,381,471
Yorkton District	1,070,720	1,110,961
Saskatoon District	1,082,880	1,138,079
Prince Albert District	1,375,750	1,332,568
North Battleford District	991,960	1,061,608
Management Services Branch	939,190	961,984
Central Survey & Mapping Agency	1,410,040	1,427,296
Grants	14,600	13,000
	16,936,820	17,154,886
Maintenance	56,965,420	60,548,761
	73,902,240	77,703,647
Capital		
Rural Surface Transportation	80,984,000	83,195,430
Urban Surface Transportation	14,320,000	16,819,660
Air Transportation	750,000	741,585
Heritage Fund	14,640,000	13,013,767
	110,694,000	113,770,442
Total	**$184,596,240***	**$191,474,089**

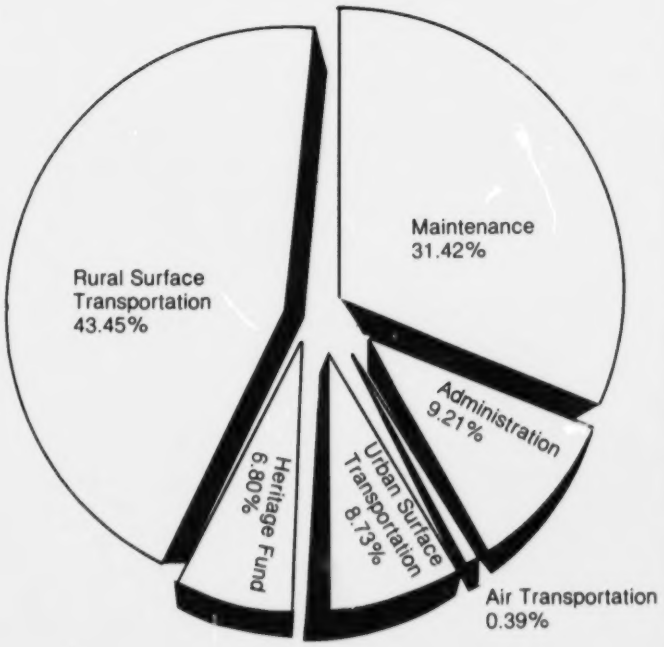
*** Appropriation does not include special warrants:**

Ordinary	$6,116,000
Capital (Rural Surface Trans.)	9,100,000
Heritage Fund	250,000

Urban Surface Transportation (Shareable) 1981-82

Roadways	
Cities	$14,794,435
Towns	1,703,860
Villages	267,109
Rural Municipalities (Hamlets)	54,256
	16,819,660

Analysis of Total Department Expenditure For 1981-82



Roadways

Cities	
Estevan	$ 8,515
Lloydminster	335,978
Melville	60,063
Moose Jaw	291,812
North Battleford	156,154
Prince Albert	807,285
Regina	3,501,452
Saskatoon	9,211,294
Swift Current	121,956
Weyburn	207,509
Yorkton	92,417
	14,794,435
Towns	
Alameda	102,478
Arborfield	450
Battleford	1,075
Big River	156
Blaine Lake	47,[illegible]
Carrot River	[illegible]
Central Butte	450
Delisle	382
Duck Lake	450
Eatonia	358
Francis	450
Gravelbourg	32,074
Hanley	38,041
Hudson Bay	74,193
Humboldt	19,504
Indian Head	119,383
Ituna	450

Kindersley	2,519
Kyle	23,561
Langenburg	77,871
Leroy	14,032
Lumsden	1,781
Maple Creek	5,812
Meadow Lake	251,438
Melfort	109,700
Midale	173
Milestone	18,025
Moosomin	41,436
Morse	450
Naicam	450
Outlook	101,078
Ponteix	228
Porcupine Plain	141
Preeceville	889
Rockglen	450
Rosetown	6,201
Sintaluta	11,331
Strasbourg	187,659
St. Walburg	91,128
Tisdale	19,532
Vanda	35,931
Wawota	49,657
Wilkie	203,177
Willowbunch	450
Wynyard	2,101
Zealandia	9,147
	1,703,860

Villages

Alvena	5,627
Avonlea	450
Brock	2,557
Buena Vista	450
Chamberlain	166
Chaplin	450
Conquest	450
Coronach	131,110
Craven	23,942
Dalmeny	3,045
Denholm	3,191
Drake	97
Earl Grey	450
Endeavor	172
Fox Valley	450
Gainsborough	9,726
Glenavon	905
Handel	17,300
Herschel	255
Hodgeville	450
Jedburgh	8,439
Kennedy	280
Leask	9,354
Leross	364
Lucky Lake	450
MacNutt	450
Mankota	10,022
Mantario	158
Marsden	450
Milden	410
Paddockwood	6,192
Paradise Hill	450
Pierceland	450
Regina Beach	192
Rhein	450
Sceptre	4,510
Semans	12,971
Shell Lake	1,100
Spalding	306
Springside	450
Stockholm	450
Tompkins	450
Turtleford	450
Weirdale	932
Wiseton	227
Wroxton	5,481
We-Non-Cha	295
Zenon Park	133
	267,109

Rural Municipalities

Bjorkdale	1,999
Buchanan	1,570
Caledonia	12,279
Grayson	2,566
Torch River	12,335
Sliding Hills	23,507
	54,256
	$ 16,819,660

Air Transportation 1981-82

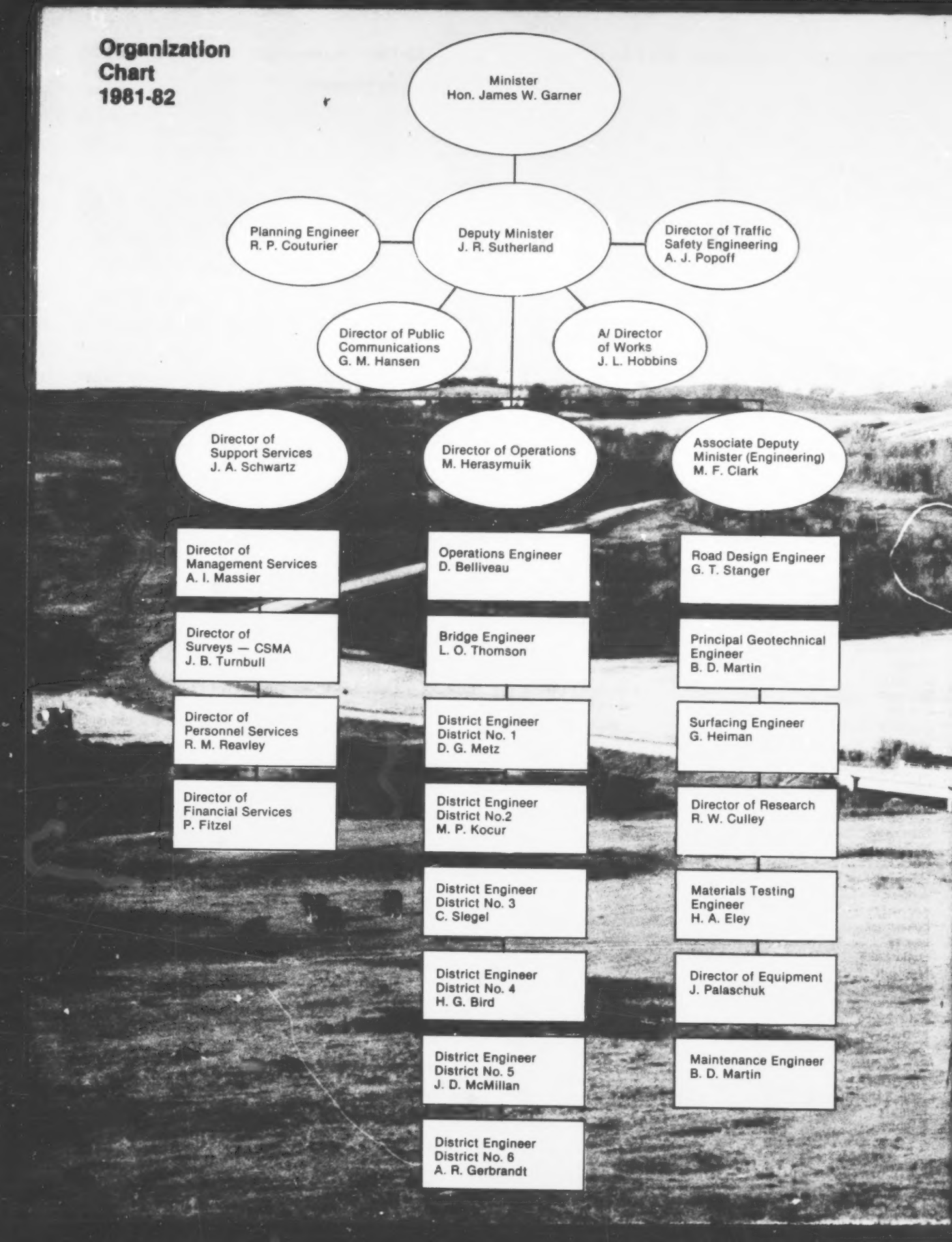
Municipal Airports

Assiniboia	$ 9,013
Biggar	5,000
Canora	1,529
Cudworth	2,200
Eatonia	1,427
Estevan	3,750
R.M. of Eye Hill	5,046
Gravelbourg	1,506
Humboldt	750
Kamsack	30,704
Kerrobert	750
Kindersley	3,700
Leader	2,004
Lloydminster	453,000
Lucky Lake	4,000
Maple Creek	1,680
Melfort	3,000
Melville	750
Moose Jaw	3,700
Moosomin	750
Nipawin	50,895
Rosetown	2,200
R.M. of Snipe Lake	5,000
Shaunavon	5,000
Tisdale	3,000
Unity	1,500
Wadena	11,495
Weyburn	3,700
Wynyard	750
Willow Bunch	2,268
	620,067

Provincial Airports

La Ronge	121,518
	$ 741,585

Organization Chart 1981-82



Published by authority of
Honourable James W. Garner, Minister
Saskatchewan Highways and Transportation

Credits

Photography:
Saskatchewan Highways and Transportation Staff

Layout and Design:
Public Communications Branch
Saskatchewan Highways and Transportation